

THE  
PATHOLOGICAL STATISTICS  
OF  
INSANITY  

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THE  
PATHOLOGICAL STATISTICS  
OF  
INSANITY.

BY

FRANCIS O. SIMPSON,

L.R.C.P. (LOND.), M.R.C.S. (ENG.),

SENIOR ASSISTANT MEDICAL OFFICER LANCASHIRE COUNTY ASYLUM, RAINHILL;  
FORMERLY SENIOR ASSISTANT MEDICAL OFFICER GOVAN DISTRICT ASYLUM, CROOKSTON;  
PATHOLOGIST AND ASSISTANT MEDICAL OFFICER WEST RIDING ASYLUM, WAKEFIELD;  
ASSISTANT MEDICAL OFFICER HANTS COUNTY ASYLUM, FAREHAM.



LONDON:  
BAILLIÈRE, TINDALL AND COX,  
20 & 21, KING WILLIAM STREET, STRAND.  
[PARIS AND MADRID.]

1900.

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## P R E F A C E.

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THE following tables were originally compiled by the wish of Dr. Bevan Lewis, with the intention of embodying them in a fresh issue of the West Riding Lunatic Asylum Medical Reports, but this scheme was frustrated, and the work appeared in a greatly abridged form in the *Journal of Pathology and Bacteriology*.

The expenditure of time and labour in the preparation of these statistics has been so great, that it has been thought well to publish them in their original entirety, preceded by the abridged papers, which serve the purpose of explaining (*a*) the method of collection, and (*b*) the classification and arrangement of the ensuing data.

LANCASHIRE COUNTY ASYLUM,  
RAINHILL, December, 1899.





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## ON A METHOD OF COLLECTING THE PATHOLOGICAL STATISTICS OF THE INSANE BRAIN.

THE following scheme is the outcome of a suggestion made to me by Dr. Bevan Lewis, as long ago as January, 1896, that the macroscopical appearances of every brain, of which a detailed examination had been made, should be collected by the pathologist and published at the end of the year.

At first the idea seemed well-nigh impracticable, but upon looking further into the matter it was found that an attempt had been made here previously in this direction, and a certain amount of material collected for the years 1875, 1877, 1879, 1881, and 1884.<sup>1</sup>

That this could not be turned to any practical advantage, on account of the confusing mass of detail involved, and the use of private symbols by the collector, was early impressed upon me, and all this work has been abandoned.

It was found that a rough scheme of examination of the brain had usually been followed by the late pathologist to this institution, and, upon an elaboration of this, the sheets were drawn out as now described.

The inconvenience of attempting work of this kind upon paper of the ordinary size is one of the greatest obstacles to be surmounted, requiring, as it does, the constant transference of figures from one sheet to another; and Dr. Bevan Lewis has been kind enough to have printed and ruled for me some sheets measuring  $53\frac{1}{4}$  in. in length by  $17\frac{1}{4}$  in. in depth, upon each of which eighty cases can be collected, or more than one-half of the total post mortem examinations for the year. At the top of the pages are headings for the majority of the 233 columns into which the sheet is divided in this direction, these being ruled to the size of ten to the inch, and a few blank ones left for any additional headings which may be required. Between each

<sup>1</sup> I have but recently ascertained (December, 1897) that this work formed the basis of a paper published by Dr. Bullen in *Journ. Ment. Sc.*, London, for January, 1890, under the title of "An Abstract of 1565 Post-Mortem Examinations of the Brain, performed at the Wakefield Asylum during a Period of Eleven Years"; but, of all the material collected, only the above now remains.

subdivision of the examination and its fellow, a red line is placed to aid reference to the middle of the sheet. Two columns are devoted to the scalp and twenty-six to the skull-cap, the remainder being apportioned as follows: Skull base, 8; basal vessels, 8; choroid plexuses, 5; dura mater, 14; sinuses, 5; pia arachnoid, 22; cerebrum, 9; gray substance, 10; white substance, 11; corpus callosum, 2; corpora striata, 6; lateral ventricles, 7; mesencephalon, 2; corpora quadrigemina, 7; crura cerebri, 7; optic thalami, 7; optic nerves, 3; pituitary body, 5; cerebellum, 19; ponto-bulb, 16; spinal cord, 11; cranial nerves and blank columns, 16; weights of organs, etc., 22.

The sheets are ruled in the other direction, with eighty columns of five to the inch; each fifth line is in red. Thus it will be seen that spaces are left for all the most important changes likely to be found in any given brain, and, the post-mortem examination over, the pathologist should run rapidly along his sheet, putting in a series of strokes indicating what he has observed. The sheet full, all that remains is to add up the columns, for which a space is left at the bottom of the page, and extract the percentages for all forms of insanity.

It is not suggested for a moment that all the changes found in the brain can be tabulated in a scheme such as this, which will be seen to be necessarily only supplementary to the record of each case in the post-mortem book.

All forms of insanity being added up for the year, the sheets are cut into strips horizontally, each representing a case; these strips are pinned to a board in clinical series, and the process of addition and percentage taking is repeated for each form of insanity.

The scheme has been now working for over three years, and, though cumbrous, is, I believe, the only way of dealing with this material. It was originally intended to publish the results of each year separately, but a sufficient number of cases of the majority of forms of insanity do not die in any one year to make the figures of much value, and the results of the first year, which had been completed, have therefore been abandoned.

I am now engaged in collating the figures for the three years 1894, 1895, and 1896, and hope to have a sufficient number of cases upon which to base a paper, with an analysis of the results found. Should this not be the case, however, I propose to include two further years, in the hope that by the end of that time some valuable results may be arrived at.

My object in now bringing this scheme before the profession is to ask those interested in insanity to adopt something of a similar nature. Were such a method followed universally, much information might be collected; the work, though monotonous, is almost certain to prove of some service.

WEST RIDING ASYLUM, WAKEFIELD.		SCALP.		Lesions.	
		New growths.		Large.	
		SKULL-CAP.	Size.	Average.	Small.
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
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47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
etc					
to					
80					

SKULL BASE.	Fossæ.	Symmetrical.
	"	Asymmetrical.
	Pituitary f.	Deep.
	"	Average.
	"	Shallow.
	Clivus.	Steep.
	"	Average.
	"	Shelving.

BASAL VESSELS.	Normal.
	Abnormal in size.
	" in arrangement.
	Atheroma. Commencing.
	" Moderate.
	" Very marked.
	Aneurysmal dilatation.
	Congestion.

CHOROID PLEXUSES.	Normal.
	Cystic degeneration.
	Tumours.
	Earthy deposit.
	Congestion.

DURA MATER.	Thickness.	Normal.
	"	Increased.
	Vascularity.	Congested.
	"	Normal.
	"	Anæmic.
	Adhesion to Cap.	Slight.
	"	Marked.
	"	Absent.
	Pacchionian bodies.	Normal.
	"	Abnormal.
	Rusty on inner surface.	
	Extravasation between Cap & Dura.	
	Ossification of Dura.	
	Tumours	" "

SINUSES.	Normal.
	Abnormal in size.
	" " arrangement.
	Thrombosis.
	Rupture.

PIA ARACHNOID.	Thickness.	Normal.
	"	Moderately increased.
	"	Excessively "
	Opacity.	Universal.
	"	Moderate.
	"	Absent.
	Vascularity.	Congested.
	"	Average.
	"	Anæmic.
	Adhesions.	Slight.
	(a) to dura.	Marked.
	(b) to cortex.	Slight.
	"	Marked.
	"	Universal.
	Arachnoid Cysts.	
	Excess of fluid.	
	Semi-gelatinous fluid.	
	Pus.	
	False membrane.	
	Crystalline granulations.	
	Tumours.	
	Tuberculosis.	

CEREBRUM.	Hemispheres.	Equal.
	"	Unequal.
	Lobes.	Symmetrical.
	"	Asymmetrical.
Convolutions.	(a) Type.	Simple.
"	"	Normal.
	"	Increased complexity.
	(b) Nutrition.	Plump.
	"	Wasted.

GRAY SUBSTANCE.	Thickness.	Normal
	"	Atrophied.
	Vascularity.	Congested.
	"	Average.
	"	Anæmic.
	Foci of softening.	
	Oedema.	
	Effusion of blood.	
	Tumours.	
	Tuberculosis.	

WHITE SUBSTANCE.	Induration.	
	Oedema.	
	Foci of softening.	
	Effusion of blood.	
	Pus.	
	Vascular Channels.	Average.
	"	Dilated.
	Anæmic	
	Punctiform hæmorrhages.	
	Tumours.	
	Tubercle.	

CORPUS CALLOSUM.	Foci of softening.
	Tumours.

CORPORA STRIATA.	Hæmorrhage.
	Punctiform do.
	Foci of softening.
	Tumours.
	Tubercle.
	Sclerosis.

LATERAL VENTRICLES.	Dilatation.	Moderate.
	"	Excessive.
	Excess of fluid.	
	Granulation of ependyma.	
	Hæmorrhage into.	
	Pus.	
	Tumours.	

MESENCEPHALON.	ITER.	Normal.
	"	Dilated.

CORPORA QUADRIGEMINA.	Congested.
	Normal.
	Hæmorrhage.
	Foci of softening.
	Sclerosis.
	Tumour.
	Oedema.

CRURA.	Normal.
	Congestion.
	Hæmorrhage.
	Foci of softening.
	Sclerosis.
	Tumour.
	Oedema.

## OPTIC THALAMI. Normal.

Hæmorrhage.
Punctiform do.
Foci of softening.
Tumours.
Tubercle.
Sclerosis.

## OPTIC NERVES. Normal.

Atrophy.
Sclerosis.

PITUITARY BODY. (a) Size.	Increased.
	Normal.
	Diminished.
(b) Structure.	Normal.
	Softened.

## CEREBELLUM. Membranes. Congested.

Vascularity.	Normal.
"	Anæmic.
Adherence.	Present.
"	Absent.
Effusion of blood in pia.	
Hemispheres.	Equal.
"	Unequal.
Lobes.	Symmetrical.
"	Asymmetrical.
Cortex.	Normal.
"	Atrophied.
Hæmorrhage.	
Punctiform do.	
Foci of softening.	
Pus.	
Oedema.	
Tumours.	
Tubercle.	

## PONTO-BULB. Basilar Artery. Normal.

"	Atheromatous.
"	Aneurysmal dilatns.
Membranes.	Normal.
"	Congested.
"	Anæmic.
Atrophy.	General.
"	Unilateral.
Congestion.	

## PONTO-BULB.—continued.

Hæmorrhage.
Punctiform do.
Foci of softening.
Tumours.
Pus.
Softened floor to vent.
Granular ependyma do.

## SPINAL CORD. Membranes. Congested.

"	Normal.
"	Anæmic.
Pus.	
Tuberculosis.	
Excess of fluid.	
Congestion.	
Substance.	Softening.
	Sclerosis.
	Tumour.
	Lesion.

## CRANIAL NERVES. Abnormalities.

## WEIGHTS. BRAIN.

Total.
R. Hemisphere.
L. Hemisphere.
Cerebellum.
Ponto-bulb.
Skull-cap.
Fluid.

## WEIGHTS. BODY.

Heart.
R. Lung.
L. Lung.
Liver.
Spleen.
Pancreas.
R. Kidney.
L. Kidney.
R. Adrenal.
L. Adrenal.

## BREAKING STRAIN OF RIBS.

Convex.
Concave.



## THE INSANE CRANIUM.

THE pathological data embodied in the ensuing article were collected at the same time and in a similar manner<sup>1</sup> to those which have already appeared in the *Journal of Pathology and Bacteriology*,<sup>2</sup> being omitted from the previous paper for the sake of conciseness.

The crania of the 398 consecutive cases examined in the foregoing essay are considered here. Of these, 245 belonged to male cadavera and 153 to female, equivalent to 61·56 per cent. and 38·44 per cent. of the totals respectively.

The numbers are again expressed as percentages in every instance, for the sake of uniformity; and the facts require likewise to be considered under two headings, namely:

1. The changes recorded in all forms of insanity; or, in other words, the results of the grand totals for the three years.

2. A comparison between the pathological changes found in the various clinical forms of insanity, which, for our purpose, may be conveniently considered in eight subdivisions.

Although many papers have been published upon the cranium of the insane, none has previously appeared dealing with the subject in the manner adopted in Part II. of this article, and careful consideration of the table at the end of the essay reveals many interesting facts.

The cranial bones become arbitrarily divided by the saw of the operator into—(1) the skull-cap, and (2) the skull-base, under which headings we may now proceed to examine them.

### I. THE CHANGES RECORDED IN ALL FORMS OF INSANITY.

#### 1. *The Skull-Cap.*

The skull-cap is most frequently abnormal in size amongst females, and, upon further investigation of our figures, this fact is seen to be very pronounced.

<sup>1</sup> "On a Method of Collecting the Pathological Statistics of the Insane Brain," *Journal. Path. and Bacteriol.*, Edinburgh and London, 1898, vol. iv. p. 249.

<sup>2</sup> "The Insane Brain," *ibid.*, vol. v., p. 460.



Neglecting cases in which the cap is of average size, a small skull occurs twice as often among the men as a large one, whilst in women microcephalus is ten times more frequent. A large cap is nearly three times more common in men than in women, whilst a small one is found twice as often amongst the females as amongst the males.

A mesocephalic, or skull normal in shape, is rather more frequent in women than in men, as is also the case in those of the dolicocephalic type. Brachiocephalus occurs nearly twice as often in men as in women, whilst dolicocephalus is twice as frequent amongst women as brachiocephalus. In men, too, the brachiocephalic skull is more seldom met with than that of the dolicocephalic type.

The cephalic indices were ascertained by measuring the antero-posterior and biparietal diameters of the skull, and employing the formula, "antero-posterior is to biparietal diameter as 100 is to  $x$ . All length-breadth indices below 78 are considered dolicocephalic; 78 to 80, mesocephalic; and above 80, brachycephalic. We may assume that the physiological limits of this index are 70 to 90. This is based upon thousands of measurements of skulls by various investigators. Any excess or diminution of these figures must hence be regarded as pathological."<sup>1</sup>

Concerning other shapes of the skull in the insane but passing mention need be made; none of them are common, in comparison with simple macrocephalus or microcephalus. The most frequent form is plagiocephalus, or oblique deformity of the head in a greater or lesser degree; and following this come platicephalus, or flattening of the head; and leptocephalus, or narrow-head. Still more rare are the oxycephalic, or steeple-shaped skull; the scaphocephalic, or keel-shaped head; and, lastly, trigonocephalus or triangular shape of the cranium.

Under the heading of symmetry of the skull-cap, the figures do not vary greatly; symmetrical caps appear rather more common amongst males, and the non-symmetrical forms are slightly oftener found in females.

The vascularity was determined by the colour of the bones, and the results are quite independent of the number and depth of the vascular channels (*vide infra*). All shades of purple and red are found in cases of congestion, which appears to be most common amongst females; whilst the marked pallor of the anæmic cap, as distinguished from the colour of healthy bone, is quite easily recognised, and this too more often in women than in men. Congestion of the cranium is found three times as often as anæmia in both sexes. Skull-caps of normal vascularity are much more common in men than in women.

The average number of the vascular channels has been approxi-

<sup>1</sup> Frederick Peterson, "Cranimetry and Cephalometry," *Am. Journ. Insan.*, Utica, New York, July, 1895, p. 74.

mated, and this is more often normal in men than in women, more frequently increased in women and diminished in men. Their depth has likewise been estimated and found to be increased much more often in women than in men, average more frequently in men, as is the case in diminution of the depth of the vascular channels.

In the category of "Ossification Deficient" have been collected all those cases in which foramina other than normal existed in the skull-cap, or where its thickness was diminished over a limited area at the expense of the inner or outer table, usually the former, the change in either case being non-pathological. When supplementary foramina exist in the skull-cap, they are usually situated near the site of the normal parietal orifices, not far from the posterior-superior angle of the parietal bone: they are generally bilateral and symmetrical, frequently of large size, and at times partially or wholly filled up by membrane of a tough fibrous consistence. In cases where a deficiency of one table only exists, such defect may be situated at any part of the cap, usually is unilateral, and may vary in size from a cavity which would hold a millet-seed to an irregularly shaped oval fossa, three-quarters of an inch in length. Such deficiencies occur more commonly in the frontal region than elsewhere.

Fracture of the skull, recent or remote, was only noted in one male; such cases, usually treated in a general hospital at the time the injury is sustained, are frequently attended with fatal results, and, of the residue, doubtless in many instances all trace of the lesion has disappeared before admission to the asylum.

The only case of neoplasm of the skull-cap occurred in a female; histologically it was a syphiloma which had extended there, secondarily, from the subjacent left frontal region. The bone was, in some places, in a condition of osteoporosis; in others, intensely hard and dense, of ivory whiteness, and thrown up into small nodules above the level of the outer table.

## 2. *The Skull-Base.*

Almost all the divisions of the cap apply equally well to the base of the skull; thus, thickness, density, general shape, etc., do not vary, both being parts of the same structure.

Under the heading of "Symmetry" is considered only the shape of the basal fossæ, for they are found to bear no necessary relationship to the symmetry of the cap. Thus, while asymmetry of the skull-cap existed in 49·35 per cent. of the cases of both sexes, the corresponding figures for the skull-base were only 13·77 per cent.; or, in other words, asymmetry of the cap is nearly four times as frequent as asymmetry of the base; and, whilst in the cap regularity and irregularity of shape are fairly equally balanced, the basal fossæ are found to be symmetrical more than six times as frequently as asymmetrical.

Besides the basal fossæ, it is of advantage, from a developmental

point of view, to consider the size of the pituitary fossa and the angle of inclination of the clivus.

The pituitary fossa is of average size and capacity in women more often than in men; a decrease in size is noted more than twice as often as increased capacity in both sexes and in males; whilst in females a small fossa is also somewhat more common than one of enlarged capacity.

The inclination of the clivus is likewise more often average in women than men, and the angle of inclination is diminished more often than increased in both sexes, being more than twice as often so in women; whilst in men the reverse holds good, the larger angle being the more common.

## II. A COMPARISON BETWEEN THE PATHOLOGICAL CHANGES FOUND IN THE VARIOUS CLINICAL FORMS OF INSANITY.

In considering the insane cranium, with regard to the changes found in the various clinical forms of insanity, the same classification has been followed as was adopted in my previous paper, in which the arguments in favour of its selection are discussed.<sup>1</sup>

### 1. *The Skull-Cap.*

The size of the skull-cap was most frequently normal in organic dementia, and in five of the other classes the figures stand at over 80 per cent. A lesser number are of normal size in epileptic insanity, only 73·3 per cent.; and a still further decrease occurs in the idiot and imbecile class, to 57·14 per cent.

Skulls of more than average size occur most often in senile dementers, being recorded in 9·75 per cent. of these cases; and are nearly as common in imbeciles, 9·54 per cent. These divisions are followed by the organic dementers, in whom they are only about half as frequent as in the cases of senility. Further reductions are noted in general paralysis, whilst in the acute class and epileptics a large skull is only found about half as often as amongst the organic dementers.

Microcephalus occurs most frequently in the idiot class, being present in one-third of the total number of cases; it is about 9 per cent. less common in epileptics, and is noted among 5 per cent. more of the latter than of the chronic melancholiacs and maniacs. Small caps were about half as frequent in general paralysis as in imbecility and idiocy, and twice as frequent in paretics as amongst simple dementers. They were about 3 per cent. more common in the last named than in the next class, that of the acute psychoses. Abnormally small skulls were about four times commoner in general

<sup>1</sup> "The Insane Brain," *Journ. Path. and Bacteriol.*, Edinburgh and London, 1898, vol. v., pp. 470-473.

paralysis than in senile dementia, and least frequent of all in organic dementia.

The skull is never of normal thickness in a greater number of cases than 52·38 per cent., and this is attained only in imbeciles. It varies between this and 31·1 per cent., the lowest figure, in the case of epileptic insanity.

An abnormally thick cap is most often found in epileptic insanity, occurring in 55·5 per cent. of these cases; it is least frequent in the acute psychoses, where it is not present in half the number of cases that it is in the foregoing.

In the classes where the skull is most frequently diminished in thickness (senile dementia and the chronic psychoses), this change is never more than about half as common as the corresponding increase, varying between 29·2 per cent. in each of these categories, and 4·76 per cent. in the case of idiots and imbeciles. In epileptic insanity a thin skull-cap is more than three times as common as in imbecility.

The density of the cranial bones is most often average in organic dementia, where the maximum figure of 43·3 per cent. is reached; general paralysis comes next, caps of average density being present in 41·76 per cent. of this class; whilst in epileptic insanity, the lowest of the series, normal density is only half as frequent as in the highest class.

Epileptics, on the other hand, show the greatest number of skulls of increased density, the total amounting to 55·5 per cent.; and the next division is senile dementia, in which a dense skull is 4 per cent. less frequent than in the foregoing. Such crania are rarest in idiocy, being only half as common in this class as amongst epileptics.

Diminished density is found oftenest in imbeciles, where 38·1 per cent. is reached; most seldom in the chronic psychoses, where the proportion is 17·07 per cent.

An overwhelming number of the crania are mesocephalic in almost all the classes under notice. The lowest figure is 47·62 per cent., and is met with in the congenital forms of insanity, the next lowest occurring in general paralytics, where 72·53 per cent. of the crania are of this shape.

The majority of the dolicocephales are senile dements, and even here the figure only reaches 19·51 per cent.; paralytic dements and imbeciles come next, and are practically equal; ordinary dements follow and show 13·58 per cent. of dolicocephalic skulls; an almost equal number, 13·3 per cent., occur in organic dementia and epileptic insanity; whilst the chronic psychoses are lowest, with 7·31 per cent. No instances of this anomaly were recorded amongst patients dying from the acute psychoses.

A large number of the imbeciles examined were brachiocephales, 38·1 per cent.; and this variation in shape is next commonest in organic dementia, 13·3 per cent., followed by general paralysis, in which 13·18 per cent. of the crania are brachiocephalic. The acute



psychoses are next in order of frequency, showing 11·43 per cent. ; and then dementes, 7·4 per cent. ; the chronic psychoses, 4·87 per cent. ; and epileptics, 4·4 per cent. Senile dementes do not show this type of cap in the present series of cases.

The skull-cap was most often of symmetrical shape in the chronic psychoses and organic dementia. Conversely, asymmetry was most frequently present in simple dementia and imbecility.

It will be seen that these results vary in many essential particulars from those recorded by Bullen,<sup>1</sup> but the figures given in his paper are admittedly an approximation, and the measurements were only estimated visually.

Beadles<sup>2</sup> roughly estimates the thinning of the insane skull as occurring in only 2 per cent. of cases at Colney Hatch, whilst Bullen<sup>1</sup> put it down as being 20 per cent. at Wakefield, and Balfour<sup>3</sup> reckons it at over 11 per cent. More accurate methods of observation show this change to be present in 22·34 per cent. of the total cases.

Normal vascularity of the cranial bones was oftenest described in organic dementia, and most seldom recorded in senile dementes, the averages being 76·6 per cent. and 51·22 per cent. respectively. Hyperæmia was commonest in epileptics, 37·7 per cent. ; and least frequent in chronic maniacs and melancholiacs, 17·07 per cent. Anæmia of the bones was most frequently recorded in senile dementia, 17·07 per cent. ; and only occurred in 3·3 per cent. of the organic dementes, the lowest class.

The vascular channels in the cap are of average number in over 50 per cent. of every class of the insane, varying between 62·2 per cent. in epileptic insanity, and 53·65 per cent. in the chronic psychoses. An increase in the number of these channels is most often noted in organic dementes, 33·3 per cent., and rarest in the congenital forms, 9·52 per cent., being about twice as common as this in the chronic psychoses, which is the next lowest subdivision. Diminution in the number of the vascular channels occurred more often in imbecility than in any other class, 28·56 per cent., and the lowest figures were met with amongst epileptics, 13·3 per cent., and organic dementes, 3·3 per cent.

The depths of the vascular channels were likewise described as being normal in over 50 per cent. of every class of case, the lowest figures occurring in chronic melancholia, 51·22 per cent. ; and the highest in epileptic insanity, 62·2 per cent. Increased depth of the vascular channels is most common in organic dementia, 40 per cent., and is least often found in imbecility, only being noted in 9·52 per cent.

<sup>1</sup> "An Abstract of 1565 Post-Mortem Examinations of the Brain, performed at the Wakefield Asylum during a period of Eleven Years," *Journ. Ment. Sc.*, London, January, 1890, p. 16 *et seq.*

<sup>2</sup> "The Cranium of the Insane," *Edin. Med. Journ.*, March, 1898, p. 263 *et seq.*

<sup>3</sup> "Pathological Appearances observed in the Brains of the Insane," *Journ. Ment. Sc.*, London, April, 1874

of the latter cases. They are most frequently decreased in depth in imbecility, 28·56 per cent., and least commonly so in organic dementia, 3· per cent.

Deficiency in ossification of the skull-cap is most often present in organic dementia, 20 per cent.; paralytic dementia, 13·18 per cent.; and terminal dementia, 9·87 per cent.; it is less commonly noticed in imbecility, 9·52 per cent.; epilepsy, 6·6 per cent.; the acute psychoses, 5·71 per cent.; and the chronic insanities, 4·87 per cent. It is entirely absent in senile dements.

## 2. The Skull-Base.

The fossæ of the base of the skull are almost invariably symmetrical in shape, whether the cap be bilaterally symmetrical or not. Larger numbers of asymmetrical basal fossæ occur in epileptic insanity than in any other form, amounting to 20 per cent. of both sexes, and three times as many cases of asymmetry occur in females as in males. Immediately following the epileptics, in number of asymmetrical skull-bases, are the imbeciles, with 19·05 per cent.; and the smallest amount of basal irregularity occurs in organic dementia, only totalling 6·6 per cent. in this latter class. It is desirable to compare the frequency of asymmetry in the cap with that in the base, and this is strikingly demonstrated in the following table:

TABLE I.—*Showing the Comparative Frequency of Asymmetry between the Skull-Caps and Skull-Bases in the Eight Classes.*

Both Sexes.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia	Epileptic Insanity.	Acute Mania and Melancholia.	Chronic Mania and Melancholia.	Idiocy and Imbecility.
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
Asymmetry of cap . . .	49·44	50·62	36·6	58·52	57·7	45·72	36·58	57·14
Asymmetry of base . . .	13·18	14·82	6·6	14·63	20·00	14·3	7·31	19·05

The greatest difference in the numbers will be seen to occur in senile dementia, being over 43 per cent., and the least in the chronic psychoses, over 29 per cent.

The pituitary fossa is subject to frequent variations in size, the highest class in which it is normal being general paralysis, with 79·12 per cent. Dementia, the chronic psychoses, and organic dementia show over 70 per cent. of normal pituitary fossæ, but the numbers shrink to considerably smaller figures in epileptic insanity and the other three classes, reaching their lowest in the acute psychoses, where 57·14 per cent. are of average size.

The fossa has been gauged in every case, and increase in its capacity occurs in over 14 per cent. of the simple demented, seniles, and imbeciles examined, the figures sinking to 4.39 per cent. in general paralysis, and 3.3 per cent. in organic dementia.

A far greater number of cases in every class shows a diminution in size rather than increased capacity of the pituitary fossa, and highest in this category comes the acute psychoses, with 31.43 per cent., the figures gradually falling to 16.49 per cent. in general paralysis, and 12.34 per cent. in simple dementia.

The following figures show practically the whole of the ground covered for both sexes, the corresponding tables for males and females being omitted for the sake of brevity:

TABLE II.—*Both Sexes.*

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
SKULL-CAP—								
Size, large . . . . .	3.29	4.93	3.3	9.75	2.3	2.85	—	9.52
„ average . . . . .	80.22	86.43	93.3	85.36	73.3	91.44	80.48	57.14
„ small . . . . .	16.49	8.64	3.3	4.87	24.4	5.71	19.51	33.03
Thickness, increased . . . . .	39.56	43.21	33.3	39.02	55.5	25.71	36.58	42.85
„ average . . . . .	35.17	35.8	46.6	31.72	31.1	48.57	34.14	52.38
„ diminished . . . . .	25.27	20.99	20.00	29.26	13.3	25.71	29.26	4.76
Density, increased . . . . .	36.27	43.21	30.00	51.22	55.5	42.85	46.34	23.8
„ average . . . . .	41.76	29.62	43.3	26.83	22.3	37.14	36.58	38.1
„ diminished . . . . .	21.97	27.17	26.6	21.95	22.3	20.00	17.07	38.1
Shape, dolicocephalic . . . . .	14.29	13.58	13.3	19.51	13.3	—	7.31	14.28
„ mesocephalic . . . . .	72.53	79.02	73.3	80.49	82.3	88.56	87.81	47.62
„ brachiocephalic . . . . .	13.18	7.4	13.3	—	4.4	11.43	4.87	38.1
Symmetry, symmetrical . . . . .	50.56	49.38	63.3	41.47	42.3	54.28	63.41	42.85
„ asymmetrical . . . . .	49.44	50.62	36.6	58.52	57.7	45.72	36.58	57.14
Vascularity, hyperemia . . . . .	28.57	32.09	20.00	31.72	37.7	22.86	17.07	19.05
„ average . . . . .	60.44	62.98	76.6	51.22	53.3	65.72	73.16	66.6
„ anæmia . . . . .	10.99	4.93	3.3	17.07	8.8	11.43	9.75	14.28
Vascular channels—								
Number, increased . . . . .	23.08	20.99	33.3	21.95	20.00	22.86	19.51	9.52
„ average . . . . .	56.04	60.49	63.3	60.97	66.6	54.28	53.65	61.9
„ diminished . . . . .	20.88	18.52	3.3	17.07	13.3	22.86	26.82	28.56
Depth, increased . . . . .	21.74	22.3	40.00	21.95	20.00	20.00	24.38	9.52
„ average . . . . .	57.61	60.49	56.6	56.09	62.3	57.14	51.22	61.9
„ diminished . . . . .	20.65	17.29	3.3	21.95	17.7	22.86	24.38	28.56
Ossification deficient . . . . .	13.18	9.87	20.00	—	6.6	5.71	4.87	9.52
Fractures, recent or remote . . . . .	—	2.47	—	—	—	—	—	—
New growths . . . . .	—	—	—	—	—	2.85	—	—
SKULL-BASE—								
Fosse, symmetrical . . . . .	86.82	85.18	93.3	85.36	80.00	85.7	92.68	80.95
„ asymmetrical . . . . .	13.18	14.82	6.6	14.63	20.00	14.3	7.31	19.05
Pituitary fossa, deep . . . . .	4.39	14.82	3.3	14.63	11.1	11.43	4.87	14.28
„ average . . . . .	79.12	72.84	70.00	58.52	68.8	57.14	70.73	61.9
„ shallow . . . . .	16.49	12.34	26.6	26.83	20.0	31.43	24.38	23.81
Clivus, steep . . . . .	12.09	19.75	6.6	17.07	26.6	22.86	9.75	28.56
„ average . . . . .	74.73	71.61	80.00	53.65	62.3	57.14	73.16	52.38
„ shelving . . . . .	13.18	8.64	13.3	29.26	11.1	20.00	17.07	19.05

## THE INSANE BRAIN.

THE following paper is compiled from the pathological statistics of the West Riding Asylum, Wakefield, for the years 1894-96, and includes the naked-eye appearances of 398 brains, 245 of which belonged to male patients and 153 to females.

The statistics have been collected by the method which I have already published,<sup>1</sup> and the delay in their appearance is due to the fact that each year was, in the first place, kept separate, with the idea of an annual issue of the results recorded. The exigencies of space and cost of production of tabular material, however, have rendered it necessary to compress the three years' work into this article, in which an analysis of the total results is attempted.

It has been found necessary, where figures are mentioned, to express the numbers as percentages, owing to the fact that portions of the brain of more than common interest are frequently reserved by members of the medical staff for private research; so that, whilst the brain coverings would be examined in every case, the results obtained, for example, in the case of the basal ganglia, would be calculated upon a total less by several units than in the first instance. At the same time, the actual figures are all preserved, and can be referred to at any time, either for the three years or for each year separately.

It is proposed to divide the following paper into four principal headings:

I. The changes recorded in all forms of insanity, or, in other words, the results of the grand totals for the three years.

II. A comparison between the pathological changes found in the various clinical forms of insanity, which, for our purpose, may be conveniently considered in eight subdivisions.

III. The weights of the brains and of their component parts.

IV. The breaking strains of the ribs.

Although the last-named has nothing whatever to do with the insane brain, the records have been carefully collected, and seem

<sup>1</sup> "On a Method of Collecting the Pathological Statistics of the Insane Brain," *Journ. Path. and Bacteriol.*, Edinburgh and London, 1898, vol. iv., p. 249.



worthy of publication from the collective investigation point of view, though perhaps not of sufficient interest to form the basis of a separate paper.

The cause of death has been registered in every case, but such a mass of information as resulted is beyond the scope of the present work.

## I. THE CHANGES RECORDED IN ALL FORMS OF INSANITY.

As before mentioned, the following is a record of 398 post-mortem examinations upon both sexes, 61·56 per cent. of these being males and the remaining 38·44 per cent. females, establishing very clearly the greater mortality amongst men in an asylum which contains 700 patients of either sex, and in which the annual admission rate on the male side is, almost invariably, considerably greater than on the female side.<sup>1</sup> The average age at death has been 49 years 8 months for both sexes, or 48 years 6 months amongst the men, and 51 years 3 months in the case of the women.

It has been found necessary to omit all the information collected under the first three headings—namely, (1) scalp, (2) skull-cap, (3) skull-base—on account of the space consumed in their consideration. We therefore proceed at once to the meninges of the brain and their vascular supply.

*Basal vessels.*—The vessels of the base (circle of Willis) were normal in size and arrangement in 74·02 per cent. of both sexes; abnormalities were more frequently noted in male cadavera than in female; thus the vessels showed some variation from the normal in size, nearly twice as often in the male cases as they did in those of the other sex, whilst abnormality of arrangement was likewise rather more frequent amongst men. The most common variation in size was asymmetrical diminution of the posterior communicating artery; the most frequent alteration in arrangement appeared to be entire absence of one of these.

Atheroma of the circle of Willis was present in 60·52 per cent. of all cases examined, and was 5 per cent. more frequent in males than in females. The degree of affection was separated into three categories:

1. Those in which the atheroma was commencing, 19·22 per cent.
2. Those where the disease was present to a moderate degree, 23·12 per cent.
3. Those in which the change was extremely advanced, 18·18 per cent.

Further study of the figures collected was not rewarded by anything of great interest. In a certain proportion of the cases of atheroma, aneurysmal dilatation of the vessels was recorded. These

<sup>1</sup> For the three years 1894-96 the admissions were: males 801, females 614.

were of small size, and in the majority of cases did not seem to have led to any further pathological changes in the surrounding structures. They were present in women slightly more often than in men, and the total number of cases exhibiting them amounted to 3.11 per cent.

The basilar artery may conveniently be considered as a separate entity from the other vessels of the base. Abnormalities in its arrangement, other than a somewhat high or low formation from the vertebrals of either side, have not been noted in the present series of cases. Atheroma of this vessel was present in 39.63 per cent. of all cases, and was more often seen in men to the extent of 8 per cent., whilst aneurysmal dilatations occurred in 2.62 per cent. of both sexes, and was more frequent in women by over 1 per cent.

*Choroid plexuses.*—The choroid plexuses were normal in 72.4 per cent. of all cases examined, abnormalities being more frequently observed in the male patients.

Cysts of the choroid were noted in 16.41 per cent. of both sexes, being about 3 per cent. more common in females than in males.

New growths were not often found in this region, the most common being essentially those containing an earthy deposit. These psammomatous neoplasms were present in 3.91 per cent. of our cases, and were more than twice as common in males as in females. In only one man was a new growth found other than those above mentioned, and it was fibromatous in structure.

The vascularity of the choroid plexuses was markedly increased in 10.42 per cent. of both sexes, 2 per cent. more frequently in men than in women. As regards diminution in their vascularity, they closely followed the figures of the pia-arachnoid.

*Dura mater.*—The thickness of the dura was increased in 40.26 per cent. of both sexes, and the change was nearly 10 per cent. more frequent in men than in women. In the remaining 59.74 per cent. the membrane was of average thickness.

The very activity of the brain depends upon the intensity of its blood-supply; and, amongst the insane, congestion is one of the most constantly observed changes. In order to eliminate, as far as possible, any fallacy, the brain must always be examined *in situ* and removed from the head before the body is opened, and this has been invariably done in the present instance.

The vascularity of the dura mater was normal in 63.89 per cent. of all cases, including both sexes, and more frequently so in women to the extent of nearly 4 per cent. The membrane was congested in 27.53 per cent. of both sexes, and this variation was 5 per cent. more frequent in males, whilst marked anæmia existed in 8.57 per cent., and was slightly more common in females.

Adhesions of the dura to the skull-cap appear to start most frequently in the frontal region, and when only slight are almost invariably limited to this locality. The cases in which they existed

were 33·76 per cent. of the total, and they were found in males 12 per cent. more frequently than in females. For convenience of consideration, adhesions have been divided into two sub-classes:

(1) Those cases in which the adhesions were slight—by which is meant cases where the cap could be removed (after sawing through the bone and chiselling), with the exertion only of considerably more force than is usually necessary, and in which the adhesions were clearly defined by the presence of portions of the membrane on the skull-cap after its displacement; and (2) those in which the adhesions were marked or universal—cases where it was necessary to incise the membrane all round before effecting the removal of the cap.

In the former category 8·83 per cent. of the cases were placed, and slight adhesions were observed over 3 per cent. more frequently in males; in the latter class 24·94 per cent. of the cases appeared, these marked adhesions being likewise more common in men to the extent of 9 per cent.

The Pacchionian bodies have been submitted to examination, so far, without any very noteworthy results. Sometimes they appear to atrophy in old age, are occasionally deficient in size and number in the congenital forms of insanity, whilst their number appears, on the whole, to be increased in general paralysis, epilepsy, and the acute psychoses. Insufficient material has been collected to enter, at present, into any further details, and the subject is now undergoing further investigation.

The dura was of a rusty colour on its inner surface, indicating hæmorrhage of recent origin, in 3·11 per cent. of both sexes, 3·3 per cent. of the men and 2·75 per cent. of the women. Recent extravasations between the calvarium and the dura mater existed in 4·67 per cent. of both sexes, and were nearly six times as common in men as in women.

The formation of bony plates in the membrane was discovered in four cases, two of either sex, and neoplasms in a like number. The new growths were in every case of a psammomatous type, and in two instances were multiple. All were of small size.

*Sinuses.*—The sinuses have been considered in the first place as regards their size and arrangement. Both of these were normal in 87·8 per cent. of the total cases, and 6 per cent. more frequently in males than in females. Abnormalities of size were recorded in 11·69 per cent., and such were nearly twice as often found in males, whilst the sinuses were abnormal in arrangement in only one case of either sex, the lateral sinus of one side being entirely absent in each instance.

Concerning thrombosis of the sinuses, it may be well to state that cases included in this heading are those in which some of the channels were filled with more or less adherent ante-mortem clot. Such cases amounted to 25·2 per cent. of the total examined, and were about 3 per cent. more frequent in men than in women.

Rupture of the sinuses occurred in only two instances, the patients in each case being men, and the site of lesion the lateral sinus near the torcula Herophili.

*Pia-arachnoid.*—In considering this, the most important of the cerebral coverings from an alienist's point of view, we may first pay attention to the thickness of the membrane, which was normal in only 29·6 per cent. of all cases, and was nearly twice as often so in women as in men; the figures being, males 21·67 per cent., females 42·76 per cent. The cases in which the membrane was thickened amounted to 70·4 per cent. of both sexes, and the change was 21 per cent. more common in men than in women. Thickening of the leptomeninges has been subdivided into two classes: (1) moderate thickening; (2) excessive thickening.

In Class 2 are included only such cases as those in which the pia-arachnoid formed a tough and extremely thickened, almost fleshy membrane, all lesser cases of increase being relegated to Class 1. Moderate increase was present in 50·4 per cent., or more than twice as often as excessive increase (20 per cent.). In male subjects moderate increase was nearly 9 per cent. more frequent than in females, and excessive increase of thickness nearly twice as frequent.

Some opacity of the pia may be found in the great majority of cases, and is often limited to a few patches, situated at the convexity of the brain, on one or both sides of the longitudinal fissure. In only 37·4 per cent. of our cases was all opacity of the pia absent, and the membrane was more frequently normal, as regards this change, in women (13 per cent.). In the remaining 62·59 per cent. some degree of opacity was noted, more often in males than in females, and these cases have been further subdivided for convenience of reference into two classes: namely, (1) those in which the opacity was moderate; (2) those in which the opacity was universal.

In the former category, 47·79 per cent. of the cases of both sexes are included, the males being nearly 2 per cent. in excess of the females; in the latter class, 14·8 per cent. appear, and the men are considerably more than twice as frequent as the women.

The vascular changes in the pia-arachnoid are both frequent and well-marked, an increase being notable in 45·2 per cent. of both sexes, and this increase occurring more commonly in males by about 14 per cent.; the pial vascularity was average in 49·08 per cent. of all cases—12 per cent. more often so in the women than in the men, and the membrane was pallid and anæmic in 5·71 per cent. for both sexes, this variation being 2 per cent. more frequent in women.

Adhesions of the membrane to the cortex were absent in 64·67 per cent.; they were recorded in male brains nearly 14 per cent. more frequently than in female, the figures being 40·42 per cent. for the men, and 26·89 per cent. for the women. In the further consideration of our cases, they naturally group themselves under three headings:



namely, (1) those in which the cortical adhesions were slight; (2) those where the adhesions to the cortex were marked; (3) those in which they were universal.

1 In this class any adhesions which existed were easily separated on stripping the membrane, and they left behind no erosions of the convolutionary surface which were visible to the naked eye. Such cases amounted to 9·34 per cent. of the total, 10 per cent. being males, and 8·27 per cent. females.

2. In the second category are collected cases showing more marked adhesions, characterized by definite and more or less extensive erosions of the convolutions being produced by stripping the pia. Adhesions of this type existed in 13·51 per cent. of all cases—that is, in 15 per cent. of the men, and 11·04 per cent. of the women. It is beyond the scope of the present paper to investigate the several regions involved, and any attempt to do so would prove practically interminable.

3. The last subdivision consists of those cases in which the pia was everywhere firmly adherent to the cortex cerebri, and in which the membrane could not be stripped without great damage to the brain substance, separation being in some cases absolutely impossible. In this list we find tabulated 12·47 per cent. of all our cases, 15·42 per cent. being males, and only 7·58 per cent. females. Such a difference is, of course, readily accounted for by the large number of general paralytics, who are chiefly of the male sex.

Cysts of the arachnoid, old or recent in origin, were found in 5·19 per cent., and were pretty evenly balanced in the two sexes.

The meshes of the membrane contained excess of cerebro-spinal fluid in 64·15 per cent. of the total cases, a very large number, and a rough index of the enormous amount of brain atrophy accompanying the chronic forms of insanity. The fluid was excessive in 69·15 per cent. of the male, and 55·85 per cent. of the female cases. It was carefully collected and measured in every case, varying from nil in some cases of epilepsy and the acute psychoses to as much as 18 fluid oz.; 7 oz. to 12 oz. being a common amount in the chronic forms of insanity and in general paralysis. The average fluid in the 398 cases at present under consideration was 4 oz., the amount for males being  $1\frac{1}{2}$  oz. more than in the case of the females, which only totalled 3 oz.

Purulent meningitis occurred in only three cases, one male and two females.

New growths of the pia-arachnoid were found in two instances, one of either sex; their structure was that of the fibro-angiomata, and they were both of small size.

Distinct tubercular meningitis occurred in one male patient.

*Cerebrum.*—Having thus disposed of the brain coverings, we now come to the consideration of the cerebrum itself, the first points being the equality and symmetry of its hemispheres. In the present series

they were equal, or practically equal, in weight in 80 per cent. of the cases, unequal in 20 per cent., inequality of the hemispheres being more often found in males by over 4 per cent. It may be objected to these figures that the division of the great brain into two halves is purely arbitrary and largely a matter of guess work; still, constant practice renders it so easy that, after section, either half is usually found to vary in weight by only 5 grms. An allowance of 10 grms. has been made for errors of section, so that all hemispheres varying by more than 15 grms. in weight from their fellows are reckoned as unequal in the above category.

The symmetry of the lobes is much more difficult to gauge accurately; any division of the cerebral hemispheres into regional components by means of a knife must necessarily be extremely unsatisfactory, much more so than the bisection of the great brain; and when we recollect the great variations in the fissures of the cerebrum, by which alone such division can be effected, it becomes a question whether the results obtained are in any way valuable. Only cases of marked asymmetry are therefore included in this class, and by this we mean brains where a notable appearance of asymmetry in one or other of the regional lobes corresponded to an increase or diminution in the weight of one cerebral hemisphere. Such cases amounted to 14.55 per cent. of both sexes, and occurred about 1 per cent. more frequently in females.

The convolutionary types may be considered in three classes: namely, (1) those brains in which the convolutions are simple in arrangement; (2) cases in which the gyri are of fairly normal type; (3) cases where the convolutions are of increased complexity in arrangement.

1. These were found to amount to 17.66 per cent. of the total cases, simplicity of type being more often noted in males by about 2 per cent.

2. Cases of normal type included 81.04 per cent. of both sexes, and were nearly 3 per cent. more common in women.

3. Increased complexity of the convolutions would not be expected to occur often in communities such as inhabit our pauper asylums. Most of the patients are somewhat deficient mentally, and those of merely average intelligence in the minority. The association between a high grade of brain-power and increased complexity of the cerebral convolutions was well demonstrated by the present investigation, which showed gyri of a complex type to occur in only 1.29 per cent. of all cases, being 1 per cent. more frequent in males than in females.

Amongst a series of cases such as the present, we should naturally expect a large number to show advanced atrophy of the convolutions, and more than half of the total number were found to do so, the percentage being 65.45. In males it was even higher, reaching 71.66 per cent., whilst in females it sank to 55.17 per cent. The considera-

tion of the area involved in each case has been abandoned for want of space; in many of the cases such convolutionary atrophy was almost universal, and, in a number of the general paralytics, very advanced microgyria in the frontal region was associated with a less marked degree in the occipital lobe and a comparatively normal motor area.

*Gray substance (cortex).*—Atrophy of the cortex was present in even a larger percentage of the cases than the foregoing, being found in many instances where, externally, the convolutions showed no marked nutritional defect. The total number of cases of cortical atrophy amounted to 71·84 per cent., leaving only 28·16 per cent. in which the gray matter was of normal thickness. The change was much more frequently noticed in males (78·38 per cent.) than in females (61·12 per cent.).

Hyperæmia of the cortex was noted in 24·48 per cent. of all cases, and occurred in 7 per cent. more of the men than of the women; anæmia was present in a slightly smaller number (23·16 per cent.), and amongst 4 per cent. more of the females than the males. The cortex was of average vascularity in 52·37 per cent., 3 per cent. more often in women than men.

Foci of softening in the cortex alone were recorded in 6·84 per cent. of both sexes, and were rather more than 1 per cent. more frequent in women.

Hæmorrhage in the cortex alone was present in 1·57 per cent. of all cases, almost evenly balanced between the sexes.

The cortex was markedly water-logged and œdematous in 40 per cent. of both sexes, and this change was more frequent by 13 per cent. in males than in females.

Neoplasms of the cortex were present in 2·1 per cent. of our cases, and were over 1 per cent. more common in men than in women.

Tubercular tumours may be separately considered with advantage, and were found involving the cortex in two instances, both of them being male patients.

*White substance.*—Induration or sclerosis of the brain substance is a change but seldom observed in the post-mortem room of this institution, and one which, in the writer's opinion, is of considerable rarity amongst the insane. The change is vaguely referred to by many authors as affecting the brains of epileptics, in such a manner as would convey the impression that the one constant and typical pathological change in epilepsy is sclerosis of the brain substance. This is far from being the case, as will be seen from the fact that the change was only mentioned in 1·32 per cent. of all forms of insanity, the percentage in females being 2·08, and in males 0·85. Further reference to this subject will be found under its heading in Part II. of this section.

(Edema of the white matter was present in 47·21 per cent. of the male cases, and much less often in those of the opposite sex (33·3 per cent.), this being equivalent to 41·91 per cent. for both sexes.

Hæmorrhages occurred in 4·5 per cent. of all cases, and were exactly twice as common in men as in women.

Abscess of this region was found in 1·32 per cent. of all cases, and was pretty equally divided between the different sexes.

Neoplasmata were present in the white matter in 1·06 per cent., and occurred doubly as often in men as in women.

Tubercular growths existed in this part of the brain in two male cases, and in one man the whole of the left temporo-sphenoidal lobe was converted into a thin-walled cyst.

*Corpus callosum.*—A focus of softening was found in the callosal body in one female case, and neoplasmata occurred in two males, but in neither instance did the tumour originate in this region, having extended thither from adjacent parts in each patient.

*Corpora striata.*—Effusion of blood into the striate bodies was noted in 3·15 per cent. of the total cases, and occurred much more often in this region in males, who numbered 3·85 per cent., the females only amounting to 2·08 per cent.

Foci of softening were present in 4·48 per cent. of all cases, and were of rather more common occurrence amongst the men.

A new growth was found in one male cadaver.

*Lateral ventricles.*—Simple dilatation was the most common anomaly, and the total number of cases of ventricular enlargement met with in the insane amounted to no less than 57·53 per cent., the males showing this change in 62·66 per cent., and the females in 49·94 per cent.

It is not in every case of dilatation of the ventricles that fluid is found in excess in their interior, as will be seen by comparison of the following figures with the above. The fluid was excessive in 50·93 per cent. of all cases, and was nearly 16 per cent. more often so in men.

Granulations of the ependyma of the lateral ventricles were found in 13·46 per cent. of our cases; in the males they were twice as common as among the females, the percentages being 16·74 and 8·27 respectively.

Hæmorrhage into the lateral ventricles was present in three males and in one female case; pus in one case of either sex; whilst tumours involved the ventricles in five males, the growths in each case having extended from without and bulged in their walls.

*Mesencephalon.*—The *iter a tertio ad quartum ventriculum* was frequently found dilated in cases where excess of fluid or ventricular enlargement coexisted. It does not by any means necessarily correspond exactly with the former, and, like ventricular dilata-



tion, may exist where there is no increase of the intracerebral fluid. It was observed in 53·17 per cent. of all cases, and was 20 per cent. more often found in the men than in the women. In cases where dilatation of the cerebral cavities does not correspond with a post-mortem excess of fluid, in all probability part of the fluid has been re-absorbed from some reason or other.

*Corpora quadrigemina.*—A focus of softening was present in one female in this region.

*Crura cerebri.*—One case of hæmorrhage and one of softening in this region was recorded, both in men.

*Optic thalami.*—Changes in this locality were not often found, the thalami being noted as normal in 96·55 per cent. of all cases examined; they were somewhat more often normal in men than in women—about 1 per cent. Hæmorrhages were found in four men, and foci of softening in 1·58 per cent. of all cases, the latter being nearly three times as common in women as in men.

*Optic nerves.*—The second cranial pair of nerves appeared normal to the naked eye in 98·68 per cent. of both sexes; one or both was atrophied in 1·04 per cent., twice as often in men as in women, and looked as if sclerosed in one female case.

*Pituitary body.*—The size of the pituitary was larger than normal in 2·91 per cent., the proportion of males in which this occurred exceeding the females by 2 per cent.; its size was smaller than average in 8·2 per cent., and this decrease was noted nearly 5 per cent. more frequently in females, whilst the pituitary was of normal size in nearly 2 per cent. more of the men than of the women. Its structure appeared to be softened and degenerated in 12·96 per cent. of both sexes, and this alteration was more common in females than in males, to the extent of nearly 3 per cent.

*Cerebellum.*—The vascularity of the cerebellar pia-arachnoid did not always coincide with that of the corresponding membrane of the great brain, and was much more frequently normal in the first-mentioned site, the figures being 67·63 per cent., and this was 3 per cent. more often found in men.

Hyperæmia was present in 27·63 per cent., and anæmia in 4·7 per cent.

Adhesions between the dura and pia were not found in the region of the cerebellum. The pia was more or less adherent to the cortex cerebelli in 12·63 per cent. of the cases of both sexes—much less frequently so than in the case of the cerebrum—and adhesions between the pia and lesser brain were 2 per cent. more frequent in men than in women.

The hemispheres of the cerebellum were unequal in 2·37 per cent. of all examinations, twice as often so in women as in men, whilst the lobes were asymmetrical in a similar number of cases. By comparison with the corresponding figures for the cerebrum, we see that such

changes were nearly ten times as frequent in the great as in the lesser brain.

Similarly, atrophy of the cerebellar cortex, noted in 22.88 per cent. of both sexes, was only present in about one-third of the number of cases in this region that it was in the great brain; was more frequently observed in female cadavera, and was usually of small extent.

Hæmorrhages occurred in the cerebellum in 1.3 per cent., and softening in 2.36 per cent., whilst cerebellar abscess was recorded in one case of either sex, and in each instance was of considerable size, involving almost the whole of the white matter of one hemisphere.

The structure of the cerebellum was notably œdematous in 30 per cent. of both sexes, this being 15 per cent. more common in men.

Neoplasmata were observed in two men and one woman, and tuberculosis in one man.

*Ponto-bulb.*—The pia in this region was normal as regards vascularity in even a greater number of cases than in the cerebellum, the percentage being 73.44 for both sexes; the membrane was notably hyperæmic in 22.42 per cent., 5 per cent. more frequently so in males, whilst anæmia was about 1 per cent. more common in females.

General atrophy of the pons and medulla occurred in two men, and unilateral atrophy in a similar number, the latter change being also found in three women.

Foci of softening were visible in 1.57 per cent., and occurred in a greater proportion of the females than of the males.

Effusions of blood were noted in 1.83 per cent., and were also more frequent in females.

A new growth was present in one man and a localized collection of pus in one woman.

Softening of the floor of the fourth ventricle was found in two men and one woman, whilst granulations of its ependyma were discovered in 14.43 per cent. of both sexes, and this change was nearly twice as frequent in men (17.65 per cent.) as in women (9.09 per cent.). It should also be noted that granular ependyma was more commonly found in the fourth than in the lateral ventricles, to the extent of about 1 per cent. of all our cases.

*Spinal cord.*—From lack of time the cord was only examined in a portion of the cases under consideration. In one male a softening and in two men sclerosis existed, whilst suppurative meningitis was found in one female.

## II. A COMPARISON BETWEEN THE PATHOLOGICAL CHANGES FOUND IN THE VARIOUS CLINICAL FORMS OF INSANITY.

The second part of this section is devoted to a comparison between the pathological changes found in the various clinical forms of insanity;

and, for convenience of consideration, the cases are now arranged under eight headings. It has been found necessary to ignore two cases, one of either sex, as they could not be included in any of the following divisions, and this fact is an additional argument for the employment of percentages rather than numbers in the present article.

*Classification, Causation, etc.*—Concerning the classification adopted, it may be well to state definitely our reasons for the following nomenclature, and the precise nature of the cases included.

CLASS 1.—The first and largest of all these subdivisions is that of General Paralysis of the Insane, 23·87 per cent. of all patients having died with this form of insanity. Amongst the males, the large number of 30·21 per cent., or nearly one-third of all deaths, was reached, whilst in women the figures were much smaller, only 13·73 per cent. being so affected. It may be mentioned that all these patients were demented at the time of death, and that the deaths have almost invariably been registered as occurring from general paralysis, and not from any intercurrent bodily disorder.

This leads us at once to the patent facts that progressive paralysis is much more prevalent, more speedily fatal, and of more insidious origin in the North of England than the South. To everyone who has experienced asylum practice in both these localities it will be obvious how many cases of general paralysis are found in the South, running a course of three, four, and, at times, even five or six years prior to their fatal termination, whilst in Yorkshire these cases rarely last even two years after admission, and frequently die in three to six months, or even less.

Concerning the more insidious origin of the disease in the North of England, almost all our paralytics are considerably demented upon reception, and it is quite the exception for them to exhibit anything like grandiose delusions, nor would they remain at large so long if showing the excitement so common in these cases in the South. It may be stated that the acute excitement of general paralysis is uncommon in this neighbourhood, and acute depression infinitely rare. The converse is the case in the South of England; almost all the patients have grandiose delusions, and exhibit most marked *bien-être*, whilst cases of acute excitement are of frequent occurrence.

On the other hand, the cases often described as being of from one week to three months' duration are far advanced as regards their physical condition upon admission here; pupillary anomalies are constant and various, spastic or tabetic symptoms almost always present; bulbar signs frequently supervene immediately, and it is common to be catheterizing and tube-feeding our patients within a few days of their admission.

Thus there may be said to be two forms of general paralysis, almost akin to the phases of rabies exhibited in the dog and rabbit, the one poison being apparently more intense, and stupefying more

quickly than the other, both causing the same result (death) in a similar way, but arriving at that terminus by entirely different routes.

The greater frequency of general paralysis in the northern counties of England is undisputed; but it may be remarked that, during the three years the writer was in residence at the Hants County Asylum, with an average of 1,000 patients of both sexes, there were never more than fifteen paralytics in the institution, and usually the number would be less than a dozen. During a corresponding period in the West Riding Asylum, Wakefield, the general paralytics have always amounted to over 80 out of 1,400 patients: in other words, the disease is nearly four times as common in the North as in the South.

When we commence to seek the cause of so great a variation, we become instantly confronted with a most difficult problem, namely, the rôle of syphilis as a factor in the causation of general paralysis. Many eminent authorities assert that the disease is invariably the result of specific infection; but were they to attend the clinique of this institution, they would be perforce compelled to modify their opinions somewhat.

In the first place, this asylum does not receive patients from any seaport, nor is there a coast town in proximity to its unions. Now the prevalence of syphilis in our large seaports over the agricultural and inland districts is undeniable, and in point of fact it is most rare for us to obtain a history or any evidence of exudative specific lesion in our patients. Secondary symptoms might be counted on the fingers without omitting any cases which have occurred here during the last three years.

Figures have not been resorted to for proof of the above statements, as so many fallacies might become introduced; but we will now proceed to something undeniable, *i.e.*, the presence of syphilitic lesions at our post-mortem examinations, more particularly in the cadavera of general paralytics. In only two males out of ninety-five paralytics examined was any trace of exudative syphilitic process discovered, the lesion in each case being a gumma.

In three out of the 303 other cases, the diagnosis of syphilitic insanity was confirmed at the autopsy, but none of these were paralytics, and they are included under the headings of chronic mania, dementia simplex, and organic dementia. It will thus be seen that it is difficult for us to establish syphilis as being the essential etiological factor in general paralysis; on the other hand, we almost invariably obtain a history of alcoholic and frequently of sexual excess and gonorrhœa in these patients.

CLASS 2.—The class dementia contains 21.11 per cent. of our total cases, 17.4 per cent. of the males, and 27.45 per cent. of the females. In this category are included all demented, excepting the organic, senile, and epileptic.

CLASS 3.—The next subdivision is that of organic dementia,



amounting to only 7·53 per cent. of the total cases, and being almost equally balanced in the two sexes. As this term is apt to be used somewhat loosely, it should be mentioned that only such cases are included thereunder as showed some macroscopical lesion upon post-mortem examination.

CLASS 4.—Senile dementia forms our next subdivision, and again it becomes necessary to mention what is meant by the term *senile dementia*. Meyer<sup>1</sup> refers to cases of such affection as dying at the ages of 50 years, 52 years, 55 years, etc.; whilst Sawyer<sup>2</sup> takes a more accurate view of the causation of this disorder, and the youngest of his cases was 70 years of age at the time of death. In this paper all cases of dementia associated with old age, but arising from other causes than senility, have been carefully relegated to their proper classes. The totals amount to 10·3 per cent. of both sexes, 12·65 per cent. of the males, and 6·53 per cent. of the females, or nearly double the number of male cases of senility that there are of female, this being due to the very large number of men admitted from the union workhouses in this state.

CLASS 5.—Under the main heading of epileptic insanity have been included all cases of dementia, mania, melancholia, idiocy, and imbecility associated with epilepsy. The cases under consideration formed 12·06 per cent. of the whole number, equivalent to 11·07 per cent. of the males, and 13·73 per cent. of the females.

CLASS 6.—The acute psychoses have likewise been included under one heading, because they are essentially only stages in the same disorder.<sup>3</sup> The totals in this class amount to 8·79 per cent.; in the men 8·57 per cent., and in the women 9·15 per cent.

CLASS 7.—For similar reasons<sup>3</sup> chronic mania and melancholia are considered together, the cases amounting to 10·55 per cent. of the totals, 6·12 per cent. being males, and 17·65 per cent. females. It is convenient here to show the cases included under the last two headings in tabular form.

TABLE I.—*Comparative Frequency of Deaths in Components of Classes 6 and 7.*

Mental Condition.	Males.	Females.	Total.
Acute mania. . . .	12	8	20
Acute melancholia . . .	9	6	15
Chronic mania . . . .	9	12	21
Chronic melancholia .	6	15	21

<sup>1</sup> *Pathological Report, Illinois Eastern Hospital for the Insane*, 1896, pp. 18 and 26.

<sup>2</sup> *St. Lawrence State Hospital Report*, 1895, pp. 160-162.

<sup>3</sup> Bevan Lewis, "Text-Book of Mental Diseases," 1889, p. 115.

CLASS 8.—Imbecility and idiocy naturally group themselves into one class, and here the number of cases to be dealt with is so small as to render the results of but little value, amounting as it does to only 5·27 per cent. of the totals, 6·53 per cent. being males and 3·26 per cent. being of the female sex. The individual numbers are sub-joined in Table II.:

TABLE II.—*Comparative Frequency of Deaths in Components of Class 8.*

Mental Condition.	Males.	Females.	Total.
Imbecility . . . . .	12	3	15
Idiocy . . . . .	4	2	6

It may be thought that the above classification is in many respects faulty, and there are unquestionably grave objections to its use; but it seems the most suitable for our present purpose, and has not been adopted without careful discussion of the subject with Dr. Bevan Lewis and my various colleagues.

The following extremely interesting Table (III.) shows the relative frequency of occurrence of the various classes at death, with percentages:

TABLE III.—*Relative Frequency of the various Classes at Death, with Percentages.*

	Totals.	Per- cent- age.	Males.	Per- cent- age.	Females.	Per- cent- age.
1	General paralysis . . . . .	23·57	General paralysis . . . . .	30·21	Dementia . . . . .	27·45
2	Dementia . . . . .	21·11	Dementia . . . . .	17·14	Chronic melancholia and mania . . . . .	17·65
3	Epileptic insanity . . . . .	12·06	Senile dementia . . . . .	12·65	Epileptic insanity . . . . .	13·73
4	Chronic melancholia and mania . . . . .	10·55	Epileptic insanity . . . . .	11·07	General paralysis . . . . .	13·73
5	Senile dementia . . . . .	10·3	Acute melancholia and mania . . . . .	8·57	Acute melancholia and mania . . . . .	9·15
6	Acute melancholia and mania . . . . .	8·79	Organic dementia . . . . .	7·34	Organic dementia . . . . .	7·84
7	Organic dementia . . . . .	7·53	Imbecility and idiocy . . . . .	6·53	Senile dementia . . . . .	6·53
8	Imbecility and idiocy . . . . .	5·27	Chronic melancholia and mania . . . . .	6·12	Imbecility and idiocy . . . . .	3·26

It will be seen that the percentages above do not total quite one hundred. This is due to the fact that one case of *folie circulaire* and one of paranoia could not be satisfactorily included in any of the above classes.

*Age.*—Concerning the ages at death for both sexes, senile dementia

is naturally first, the average at death being 75 years in this affection. Organic dementia is next, 59·25 years; dementia follows, 53·6 years; then come chronic mania and melancholia, 50·5 years; the acute psychoses, 46 years; general paralysis, 41 years; epileptic insanity, 38 years; and congenital forms, 29 years. In the males the order is exactly the same, and the ages as follows: Senile dementia, 75 years; organic dementia, 58 years; dementia, 53·3 years; chronic psychoses, 49 years; acute psychoses, 47 years; general paralysis, 40·6 years; epileptic insanity, 38·5 years; and congenital deficiencies, 27·5 years. A similar arrangement is found in the case of the females, for senile dementia again heads the list with an age at death of 75·5 years, and it is followed by organic dementia, 59·75 years; dementia, 54·3 years; chronic psychoses, 51 years; acute psychoses, 45 years; general paralysis, 42 years; imbecility and idiocy, 39 years; and, lastly, epileptic insanity, 36 years. For convenience of reference, these results are expressed in the following table:

TABLE IV.—*Relative Ages at Death of the various Classes, also expressed in Years.*

	Totals.	Years.	Males.	Years.	Females.	Years.
1	Senile dementia . . .	75	Senile dementia . . .	75	Senile dementia . . .	75·5
2	Organic dementia . . .	59·25	Organic dementia . . .	58	Organic dementia . . .	59·75
3	Dementia . . .	53·6	Dementia . . .	53·3	Dementia . . .	54·3
4	Chronic melancholia and mania . . .	50·5	Chronic melancholia and mania . . .	49	Chronic melancholia and mania . . .	51
5	Acute melancholia and mania . . .	46	Acute melancholia and mania . . .	47	Acute melancholia and mania . . .	45
6	General paralysis . . .	41	General paralysis . . .	40·6	General paralysis . . .	42
7	Epileptic insanity . . .	38	Epileptic insanity . . .	38·5	Imbecility and idiocy . . .	39
8	Imbecility and idiocy . . .	29	Imbecility and idiocy . . .	27·5	Epileptic insanity . . .	36

Thus it will be seen that there is practically no difference in the ages of the sexes at death; but if Class 6, the acute psychoses, and Class 7, the chronic psychoses, be analyzed with regard to the ages attained therein, some interesting results are obtained, which are demonstrated in the following table:

TABLE V.—*Comparative Ages at Death in Classes 6 and 7.*

Mental Condition.	Males.	Females.	Totals.
Acute mania . . . . .	50	47·5	49
Acute melancholia . . . . .	44	39	42
Chronic mania . . . . .	51·5	46	49
Chronic melancholia . . . . .	39·5	56	52

There is little difference in the age at death of acute maniacs of either sex, or between cases of acute and chronic mania, but a very considerable gap in the melancholiacs; acute melancholia killing women five years earlier than men, chronic melancholia proving fatal in men five years sooner than acute, and women succumbing nine years earlier in the case of acute than of chronic melancholia, whilst the females suffering from the latter live over sixteen years longer than the males who exhibit the same alienation.

In conclusion of this subsection, the ages of the congenital forms may be conveniently arranged in a table, as has already been done in the case of the two previous classes, showing that idiots only live to half the age of imbeciles in this asylum.

TABLE VI.—*Comparative Ages at Death in Class 8.*

Mental Condition.	Males.	Females.	Totals.
Imbecility . .	37	50	39
Idiocy . . . .	18	23·5	19

#### PATHOLOGICAL APPEARANCES.

In the consideration of the pathological changes found in the various forms of insanity, an attempt was made originally to do away with the tabular form of statistics entirely; but it is much shorter, and far more intelligible to leave the figures in the various columns to speak for themselves, and these have been reduced to the three pages found at the end of Part II. from being, in the first place, over six times that number, only the more salient features being alluded to in the accompanying paragraphs.

*Basal vessels.*—Abnormalities in the size of the basal vessels were much more common than variations in arrangement; both these conditions occurred most frequently in organic dementia, whilst in epileptic insanity and the chronic psychoses no abnormalities of arrangement were noted.

Atheroma of the circle of Willis has been divided into three classes in respect to its extent, but if the totals be elicited by addition, it will be noted that atheroma occurred most seldom amongst epileptics and imbeciles. It was not nearly so frequent in the cases of senile dementia (68·29 per cent.) as amongst organic dement (93·3 per cent.), and simple dement (71·61 per cent.).<sup>1</sup>

On the other hand, atheroma of the basilar artery was far more

<sup>1</sup> The exigencies of space render it necessary in future to refer merely to the results obtained for all cases in the various subdivisions, and not to attempt a comparison between the two sexes.



common amongst cases of senility (75·61 per cent.) than in organic (50 per cent.) and ordinary dementia, least common in epilepsy and idiocy, whilst the basilar artery was more often atheromatous in old age than the other vessels of the base.

Aneurysms of the basilar artery were most frequently found in senile demented, and were twice as common in this site as in the circle of Willis, where they occurred with equal frequency in the chronic psychoses.

*Choroid plexuses.*—Cysts of the choroid were the commonest abnormality found in these structures, oftenest present in senile dementia and the chronic psychoses, least frequently observed in epilepsy and the acute psychoses. In cedematous and much atrophied brains, the condition is often present in a very marked degree, and frequently accompanied by extreme internal hydrocephalus.

Psammomata were found in all forms of insanity excepting the epilepsies, chronic psychoses, and imbecilities; they were much more frequently present in organic dementia (13·3 per cent.), and general paralysis (7·69 per cent.), than in the other forms.

*Dura mater.*—This membrane appears to become thickened in old age, judging by the very much larger number of cases of increased thickness found amongst senile demented than amongst the other insane. All classes furnished some cases of this change, which is least common in the simple imbecilities and acute psychoses.

Hyperæmia of the dura was of common occurrence in the epileptics and acute forms of insanity (40 per cent. each), most seldom found in organic dementia (16·6 per cent.), whilst pallor or anæmia of the membrane was most frequent in simple dementia (12·34 per cent.), and least common in the acute psychoses (2·85 per cent.). Variations in the vascularity and thickness of the dura mater occurred in all the clinical classes.

Adhesions between the dura and cranial bones were present in 65·84 per cent. of the senile demented, far more frequently than in any other class; they were least common in imbecility and idiocy, being present in only 14·28 per cent. of these cases.

*Sinuses*—Variations in the size of the cerebral sinuses were present in all the subdivisions, with the exception of organic dementia. They were most frequent in seniles, being present in 17·07 per cent. of the cases, and were least often observed in the acute psychoses, only 2·85 per cent. of this class being so affected. The variation most commonly consists in inequality of the lateral sinuses, and when the arrangement is altered, one of these is usually absent. This latter change was found in an equal, though very small, number of the cases of acute mania and melancholia and senile dementia.

*Pia-arachnoid.*—Reference to the tables will show that the thickness of this membrane was increased in 84·62 per cent. of the general paralytics, the headings of organic and senile dementia showing the

next largest figures. The pia was thickened in over 50 per cent. of every class of the insane, the lowest percentage occurring in the simple imbeciles.

Opacities of the pia will be found classified as universal or moderate. Under the former heading are included only those cases where every part of the membrane, covering both the vault and base of the brain, had become converted into a thick whitish translucent structure; this condition was noted in as many as 38·46 per cent. of the general paralytics, and occurred more or less in every form of insanity, being most seldom seen in epilepsy. A moderate degree of opacity was present in 70·72 per cent. of the senile dements, being also very frequent in the organic and simple dements, whilst it was least often observed in the idiots and cases of acute mania and melancholia.

Hyperæmia of the pia-arachnoid was present in 62·2 per cent. of the epileptic insane, and 53·85 per cent. of the general paralytics; anæmia was most frequent in general paralysis, simple dementia, and the epilepsics, but infrequent in all these classes, and never more than one-fifth as common as the converse vascular alteration.

Adhesions of the membrane to the cortex are dealt with, as mentioned in Part I. of this paper, in the tables; we may, however, here consider the total number of cases in which adhesions existed. In 76·92 per cent. of the paralytics, such adhesions were found; that is to say, 30 per cent. more frequently than in organic dementia, where the next largest number occurred. Brains of patients with chronic psychoses showed the fewest adhesions, which were only present in 2·48 per cent. of this class.

Arachnoid cysts were present in about an equal number of our first four clinical divisions, less frequently in the last three, and absent in the epileptics.

Excess of cerebro-spinal fluid was recorded in some cases of each subdivision, being most frequent in senile dementia and general paralysis, least often observed in epileptic insanity.

*Cerebrum.*—Inequality of the cerebral hemispheres was noted in 46·6 per cent. of the organic dements—more than twice as frequently as in progressive paralysis, which showed the next highest figures.

Asymmetry of the lobes of the great brain was present most frequently in organic dementia (30 per cent.), and next in epilepsy, where it was found in 24·4 per cent. of the cases.

The convolutionary type was only noted as being of increased complexity in three classes, namely, organic dementia, senile dementia, and general paralysis, in this order of frequency; but a simple arrangement of the gyri was present in some cases of every clinical class, the simple imbecilities naturally leading, with 57·14 per cent., and being followed by epileptic insanity (including the epileptic imbecilities), with 31·1 per cent.

Every division showed numerous instances of atrophy of the convolutions, senile dementia heading the list with 87·81 per cent., and being closely followed by general paralysis (81·33 per cent.), and organic dementia (80 per cent.).

*Gray substance (cortex).*—Cortical atrophy existed in a very large number of all cases; amongst the general paretics 89·77 per cent. of the brains showed this change, senile dementia coming next highest with 85·36 per cent.

Hyperæmia of the cortex was noticed most often in epileptics and organic demented, whilst in the chronic psychoses it was present in only 7·31 per cent. The converse condition, anæmia, was most common in this latter class and the simple demented, being almost equally frequent in all the subclasses.

The cortex was cedematous in 65·86 per cent. of the senile demented, and in almost as many of the paretics. This condition was most seldom observed in epileptic insanity.

*White substance.*—The subject of induration or sclerosis of the brain next claims attention. It has already been mentioned (Part I.) that this condition is considered very rare, being found in only 1·32 per cent. of the total cases. Turning now to the inspection of its occurrence in the various clinical subclasses, we shall see that only under the heading of epileptic insanity were any cases of sclerosis recorded, and even in this class it was far from frequent.

Andriezen<sup>1</sup> refers to the change as being of common prevalence in epileptic idiocy and imbecility, and leads the reader to suppose that it was present in nearly every case out of fourteen examined by him, principally at this asylum. An examination of the post-mortem records shows that fifteen autopsies were performed by this writer upon idiots and imbeciles whilst in residence in this institution, nine of the cadavera being those of simple congenital deficiencies, and the remaining six of the epileptic types. He referred to sclerosis of the brain substance in six out of the above-mentioned fifteen cases; and during the period referred to (about twelve months) three paralytic epileptic imbeciles died in this asylum, in whom peculiarly gross brain abnormalities were found.

That this was purely a coincidence is shown by the fact that only one such case has been noted during the ensuing three years, and that they were of rare occurrence in years previous to the period of which we are now speaking. It is erroneous to associate such changes with the pathogenesis of epileptic imbecility and idiocy, of which they are only occasional concomitants.

In the present series of cases, sclerosis was only recorded in 11·36 per cent. of the epileptic insane, and these figures include the idiots and imbeciles suffering from epilepsy. For the latter classes alone, sclerosis

<sup>1</sup> "The Pathogenesis of Epileptic Idiocy and Epileptic Imbecility," *Brit. Med. Journ.*, London, 1897, vol. i., p. 1081 *et seq.*

was only noted, during the three years at present under consideration, in three cases out of seventeen, equivalent to about 17·64 per cent.

It is extremely difficult to find any records from other asylums with which to compare the above figures. Out of a hundred autopsies chronicled by Sawyer,<sup>1</sup> only four were performed upon epileptics, and no mention is made of induration of the cerebral substance in any of these cases. Meyer<sup>2</sup> recorded sclerosis in three cases out of twenty-four epileptics, or 12·5 per cent., somewhat more frequently than the change was found in the present series. From Bullen's paper,<sup>3</sup> which contains by far the largest number of results from amongst the insane, nothing tangible can be gathered as to the rarity or otherwise of cerebral sclerosis, and the article consists of the records of numerous different observers.

With regard to the other forms of insanity associated with epilepsy, Andriezen has recorded four cases of sclerosis in the fourteen brains inspected. The change has proved still rarer in the present series of cases, being only chronicled in two out of the twenty-seven cadavera examined. Sufficient evidence has now been produced to show that cerebral sclerosis is neither pathognomonic nor pathogenetic of any form of epileptic insanity.

Œdema of the white matter of the brain followed mainly the order of frequency already mentioned under œdema of the cortex, but the figures were not identical in every class, as will be seen by reference to the tables at the end of this section.

*Corpora striata.*—Hæmorrhages and foci of softening in the striate bodies were most frequently found in cases of organic dementia, much less often in senile and simple dementes.

*Lateral ventricles.*—As before mentioned, dilatation of the lateral ventricles does not invariably coincide with the presence therein of an excess of fluid. Cases in which excess of fluid was measured were considerably less, in every form of insanity, than those of ventricular dilatation, nor was the *iter* dilated so often as the ventricles, whilst it was more common for this passage to be dilated than for the cerebral chambers to contain increased liquid.

Granulations of the ependyma of the lateral ventricles were found in every class. They were fairly common in general paralysis, being found in 26·14 per cent of both sexes, whilst they were most seldom present in organic dementia, being only noted in 3·3 per cent. of this class.

*Optic tracts.*—Foci of softening and hæmorrhages were the most common lesions found in the thalami, and were more frequently observed in organic and senile dementes than in the other forms of insanity.

<sup>1</sup> *St. Lawrence State Hospital Report*, 1895, pp. 165-182.

<sup>2</sup> *Pathological Report, Illinois Eastern Hospital for the Insane*, 1896, pp. 61-103.

<sup>3</sup> "1565 Post-Mortem Examinations of the Brain, performed at the Wakefield Asylum during a period of Eleven Years," *Journ. Ment. Sc.*, London, 1890, pp. 15-43.



With regard to the cases in which atrophy of the optic nerves was noticed, we should remind the reader that they embrace only such as showed the change macroscopically, and the same remark holds good for cases in which the thalami and nerves were stated to be normal.

*Pituitary body.*—Variations in the size of the pituitary gland were most commonly noted in the acute psychoses, and increased size was next most frequent amongst the senile insane. Diminution in its size, after the acute psychoses, was most frequently noted in the simple and organic dementes, least often in the chronic forms of insanity and epileptics.

The structure of the pituitary showed some notable softening to the naked eye in cases out of every clinical class, and this was most commonly observed in senile and simple dementes and the acute psychoses. The change was least often observed in the chronic psychoses, epileptics, and the simple congenital forms.

*Cerebellum.*—In examining the cerebellum we should note that there was no direct similarity between the conditions of the membranes of this and the great brain, either as regards their vascularity, or the presence or absence of adhesions.

It is true that hyperæmia of the pia in this region was found most frequently amongst epileptics, as was the case in the cerebrum, but this was followed in order of frequency by the acute psychoses in the case of the cerebellum, and by general paralysis in the great brain. Whilst anæmia of the pia arachnoid was most frequent in general paralysis and simple dementia in the cerebrum, it was most often observed in organic dementia and epileptic insanity in the case of the lesser brain.

Adhesions of the pia to the cerebellum differed materially in order of frequency from those in the great brain. Certainly they were present most often in paralytics in both localities, but were less than one-third as common in the cerebellum as in the cerebrum of general paralysis. The other classes also showed considerable variety with regard to the frequency of adhesions in these two regions, and in the cerebellum; the next most common class to general paralysis for them to occur in was imbecility and idiocy.

The estimation of inequality of the cerebellar hemispheres and asymmetry of its lobes has been determined mainly from their appearance. Inequality of the hemispheres corresponded roughly in order of frequency with the same variation in the great brain, being most common in organic dementia and epileptic insanity, though more than seven times as rare in this region, as was the case in the cerebrum. Asymmetry of the cerebellar lobes corresponded in every way with inequality of its hemispheres.

Atrophy of the cortex in this region was most frequent in senile dementia (34.14 per cent.) and general paralysis (32.2 per cent.). These clinical classes were reversed in the case of the great brain,



cortical atrophy being much more frequent in the cerebrum of both subdivisions than in the cerebellum.

(Edema of the cerebellum was fairly frequent in all the demented classes, being found most often in general paralysis (51·1 per cent.), and least frequently in the acute and chronic psychoses.

Tuberculosis of the cerebellum was present in 1·25 per cent. of the simple demented only, and is mentioned here merely to draw attention to the rarity with which tubercle is found in this asylum in any part of the brain or its membranes (*vide* Table VII.).

*Ponto-bulb.*—Hyperæmia of the pia in this region was of equal frequency in general paralysis and epileptic insanity, but of rather more common occurrence in the acute psychoses than in either of the foregoing classes. Here again we may draw attention to the fact that there was no relationship between the frequency of this change in the ponto-bulb and the other cerebral components. The same applies to anæmia of the membrane, which was noted most frequently in simple dementia, and was not present in this locality in the case of organic dementia, the chronic psychoses and imbecility.

Foci of softening were observed most often in organic demented, the only other classes in which they occurred being epileptics and general paralytics.

The floor of the fourth ventricle was softened in a few cases of organic dementia, senile dementia, and general paralysis, in this order of frequency.

Granulations of the ependyma of this ventricle were recorded in every clinical class. Their number was highest in general paralysis (30 per cent.), being more than twice as frequent in this disease as in senile dementia, whilst they were most seldom observed in imbecility and idiocy. In none of our clinical classes, excepting the chronic psychoses, did they bear any relation to the same change in the other cerebral ventricles in point of numbers.

TABLE VII.—*Both Sexes.*

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
BASAL VESSELS (circle of Willis, etc.)—	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.
Normal size and arrangement	72·53	72·84	56·6	70·72	82·2	85·7	80·48	66·6
Abnormal size	25·28	33·3	40·0	29·26	17·7	14·3	19·51	33·3
„ arrangement	5·49	1·23	6·6	4·87	—	2·85	—	4·76
Atheroma, commencing	25·28	16·05	26·6	14·63	17·7	14·3	17·07	19·05
„ moderate	17·58	28·39	30·0	34·15	11·1	34·29	19·51	9·52
„ very marked	10·99	27·17	36·6	19·51	—	8·57	14·63	—
Aneurysmal dilatation	3·29	3·7	3·3	4·87	—	2·85	4·87	—

TABLE VII.—Continued.

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.
BASAL VESSELS (basilar artery)—								
Normal . . . . .	63·3	55·0	50·0	24·39	82·2	76·47	60·97	80·0
Atheromatous . . . . .	36·6	45·0	50·0	75·61	17·7	23·52	39·02	20·0
Aneurysmal dilatation . . . . .	—	5·0	3·3	9·75	—	—	2·43	—
CHOROID PLEXUSES—								
Normal . . . . .	71·44	73·74	60·0	65·86	75·5	71·42	73·16	76·19
Cysts of the choroid . . . . .	14·29	17·5	20·0	29·26	6·6	5·71	24·38	14·28
Tumours . . . . .	—	1·25	—	—	—	—	—	—
Earthy deposit . . . . .	7·69	2·5	13·3	2·43	—	2·85	—	—
DURA MATER—								
Thickness, normal . . . . .	58·24	56·78	66·6	31·72	66·6	71·42	68·41	80·90
increased . . . . .	41·76	43·22	33·3	68·28	33·3	28·57	36·58	19·05
Vascularity, hyperæmic . . . . .	29·67	25·92	16·6	26·83	40·0	40·0	19·51	19·05
normal . . . . .	63·74	61·74	76·6	62·42	51·1	57·14	70·72	71·42
anæmic . . . . .	6·59	12·34	6·6	9·75	8·8	2·85	9·75	9·52
Adhesion to cap, slight . . . . .	10·99	8·64	13·3	4·87	8·8	11·43	2·43	9·52
marked . . . . .	18·68	19·75	26·6	60·97	24·4	25·71	21·95	4·76
absent . . . . .	70·33	71·61	60·0	34·15	66·6	62·86	75·62	85·71
Rusty appearance on inner surface . . . . .	2·19	3·7	—	9·75	2·2	2·85	2·43	—
Hæmorrhage between cap and dura . . . . .	3·29	6·17	6·6	4·87	4·4	8·57	2·43	—
Ossification . . . . .	2·19	2·47	—	—	—	—	—	—
Tumours . . . . .	1·09	1·23	—	—	—	2·85	—	—
SINUSES—								
Normal size and arrangement . . . . .	85·72	88·3	100	80·49	84·4	94·28	85·35	90·48
Abnormal size . . . . .	14·29	11·1	—	17·07	15·5	2·85	14·63	9·52
arrangement . . . . .	—	—	—	2·43	—	2·85	—	—
Thrombosis . . . . .	27·47	25·92	13·3	26·83	26·6	11·43	34·14	23·81
Rupture . . . . .	—	1·23	—	—	2·2	—	—	—
PIA-ARACHNOID—								
Thickness, normal . . . . .	15·38	34·57	23·3	24·39	42·2	34·29	34·14	47·62
increased . . . . .	84·62	65·43	76·6	75·6	57·7	65·71	65·84	52·37
Opacity, universal . . . . .	38·46	7·4	13·3	12·19	2·2	8·57	4·87	4·76
moderate . . . . .	46·16	50·62	56·6	70·72	42·2	37·14	46·34	23·81
absent . . . . .	15·38	41·98	30·0	17·07	55·5	54·28	48·77	71·42
Vascularity, hyperæmic . . . . .	53·85	35·82	46·6	39·02	62·2	45·72	31·7	42·85
average . . . . .	38·46	56·78	50·0	56·09	31·1	51·42	63·41	52·38
anæmic . . . . .	7·69	7·4	3·3	4·87	6·6	2·85	4·87	4·76
Adhesions to cortex, slight . . . . .	10·99	9·87	20·0	4·87	13·3	14·3	—	—
marked . . . . .	29·67	9·87	10·0	12·19	8·8	11·43	—	4·76
universal . . . . .	36·26	1·23	16·6	2·43	11·1	—	2·43	9·52
absent . . . . .	23·08	79·03	53·3	80·49	66·6	74·27	97·55	85·71
Arachnoid cysts . . . . .	6·59	6·17	6·6	7·31	—	5·71	2·43	4·76
Excess of fluid . . . . .	83·52	72·82	80·0	85·36	17·7	42·85	58·53	33·3
Pus . . . . .	1·09	—	3·3	—	—	—	2·43	—
Tumours . . . . .	—	1·23	3·3	—	—	2·85	—	—
Tuberculosis . . . . .	—	1·23	—	—	—	—	—	—

TABLE VII.—*Continued.*

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
CEREBRUM—	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.	P. et.
Hemispheres, equal . . .	76·93	91·36	53·3	78·04	66·6	91·43	95·12	80·95
„ unequal . . .	23·07	8·64	46·6	21·95	33·3	8·57	4·87	19·05
Lobes, symmetrical . . .	81·33	93·83	70·0	85·36	75·5	91·43	92·68	90·48
„ asymmetrical . . .	18·67	6·17	30·0	14·63	24·4	8·57	7·31	9·52
Convolutions—type, simple . . .	15·38	14·82	6·6	9·75	31·1	11·43	12·19	57·14
„ normal . . .	83·53	85·18	86·6	87·81	68·8	88·56	87·8	42·85
„ complex . . .	1·09	—	6·6	2·43	—	—	—	—
Convolutions—nutrition, normal . . .	18·67	35·82	20·0	12·19	55·5	57·14	53·65	38·1
Convolutions — nutrition, wasted . . .	81·33	64·18	80·0	87·81	44·4	42·85	46·34	61·9
GRAY SUBSTANCE (cortex)—								
Thickness, normal . . .	10·23	27·5	23·3	14·63	51·1	45·72	41·47	40·0
„ atrophied . . .	89·77	72·5	76·6	85·36	48·8	54·28	58·53	60·0
Vascularity, hyperæmic . . .	23·41	13·75	33·3	14·63	46·6	25·71	7·31	40·0
„ average . . .	47·73	60·0	43·3	60·97	37·7	60·0	65·86	35·0
„ anæmic . . .	23·86	26·25	23·3	24·39	15·5	14·3	26·82	25·0
Foci of softening . . .	2·27	1·25	46·6	17·07	4·4	—	—	—
Edema . . .	64·77	38·75	56·6	65·86	13·3	17·14	17·07	20·0
Hæmorrhage . . .	1·13	1·25	13·3	—	—	—	—	—
Tumour . . .	1·13	—	16·0	—	2·2	5·71	2·43	—
Tuberculosis . . .	—	—	3·3	—	—	—	—	5·0
WHITE SUBSTANCE—								
Induration . . .	—	—	—	—	11·36	—	—	—
Edema . . .	65·92	41·25	60·0	65·86	15·91	17·14	12·19	20·0
Foci of softening . . .	2·27	1·25	43·3	17·07	6·81	—	—	—
Hæmorrhage . . .	2·27	7·5	10·0	—	11·36	2·85	—	5·0
Pus . . .	1·13	1·25	6·6	—	2·27	—	—	—
Tumours . . .	—	—	10·0	—	—	2·85	—	—
Tuberculosis . . .	—	—	3·3	—	—	—	—	5·0
Cysts . . .	—	—	3·3	—	—	—	—	—
CORPUS CALLOSUM —								
Foci of softening . . .	—	—	3·3	—	—	—	—	—
Tumours . . .	—	—	6·6	—	—	—	—	—
CORPORA STRIATA—								
Hæmorrhage . . .	2·27	2·5	16·6	—	2·27	2·85	—	5·0
Foci of softening . . .	1·13	6·25	20·0	7·31	2·27	2·85	2·43	—
Tumours . . .	—	—	3·3	—	—	—	—	—
LATERAL VENTRICLES—								
Dilatation . . .	80·68	62·5	73·3	78·04	29·55	31·42	41·45	30·0
Excess of fluid . . .	72·74	57·5	66·6	73·16	18·18	17·14	31·7	25·0
Granular ependyma . . .	26·14	11·25	3·3	14·63	9·09	8·57	9·75	5·0
Hæmorrhage into ventricles . . .	—	—	6·6	—	2·27	—	—	5·0
Pus in ventricles . . .	—	—	3·3	—	—	—	—	5·0
Tumours in ventricles . . .	—	1·25	6·6	2·43	—	2·85	—	—
MESENCEPHALON—								
Iter, normal . . .	23·86	50·0	30·0	17·07	75·0	79·42	63·41	70·0
„ dilated . . .	76·14	50·0	70·0	82·93	25·0	20·58	36·58	30·0

TABLE VII.—Continued.

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. ct.	P. et.
CRURA CEREBRI—								
Foci of softening . . . .	—	—	3·3	—	—	—	—	—
OPTIC THALAMI—								
Normal . . . . .	100	97·5	83·3	97·57	97·72	100	100	90·0
Hæmorrhage . . . . .	—	1·25	3·3	—	2·27	—	—	5·0
Foci of softening . . . .	—	1·25	13·3	2·43	—	—	—	—
OPTIC NERVES—								
Normal . . . . .	100	98·75	93·3	100	100	97·05	100	95·0
Atrophy . . . . .	—	1·25	6·6	—	—	2·94	—	—
PITUITARY BODY—								
Size, increased . . . . .	2·27	3·75	3·3	4·87	—	5·88	2·43	—
„ normal . . . . .	93·19	83·75	86·6	85·36	95·46	76·47	95·12	95·0
„ diminished . . . . .	4·54	12·5	10·0	9·75	4·54	17·64	2·43	5·0
Structure, normal . . . .	88·64	81·25	90·0	78·04	93·19	85·28	92·68	95·0
„ softened . . . . .	11·36	18·75	10·0	21·95	6·81	14·71	7·31	5·0
CEREBELLUM—								
Membranes—vascularity, hyperæmic . . . . .	30·0	20·0	30·0	21·95	44·4	32·35	17·07	30·0
Membranes—vascularity, average . . . . .	64·4	73·75	63·3	75·62	48·8	64·7	80·48	70·0
Membranes—vascularity, anæmic . . . . .	5·56	6·25	6·6	2·43	6·6	2·94	2·43	—
Membranes, adherent . . .	23·59	8·75	13·3	7·31	8·8	8·82	4·87	15·0
„ non-adherent . . . . .	76·41	91·25	86·6	92·69	91·1	91·18	95·12	85·0
Hemispheres, equal . . . .	97·7	100	93·3	100	95·5	97·05	97·55	95·0
„ unequal . . . . .	2·2	—	6·6	—	4·4	2·94	2·43	5·0
Lobes, symmetrical . . . .	97·7	100	93·3	100	95·5	97·05	97·55	95·0
„ asymmetrical . . . . .	2·2	—	6·6	—	4·4	2·94	2·43	5·0
Cortex, normal . . . . .	67·7	75·0	73·3	65·86	82·2	94·11	87·8	85·0
„ atrophied . . . . .	32·2	25·0	26·6	34·14	17·7	5·88	12·19	15·0
Hæmorrhages . . . . .	1·1	2·5	—	—	4·4	—	—	—
Foci of softening . . . . .	3·3	1·25	13·3	2·43	—	—	—	—
Pus . . . . .	—	—	3·3	—	—	—	—	5·0
Edema . . . . .	51·1	28·75	36·6	48·78	13·3	8·82	7·31	10·0
Tumours . . . . .	—	—	3·3	—	—	5·88	2·43	—
Tuberculosis . . . . .	—	1·25	—	—	—	—	—	—
PONTO-BULB—								
Membranes, hyperæmic . .	31·1	13·75	20·0	19·51	31·1	32·35	14·63	15·0
„ average . . . . .	63·3	77·5	80·0	75·61	64·4	64·7	85·35	85·0
„ anæmic . . . . .	5·56	8·75	—	4·87	4·4	2·94	—	—
Atrophy, general . . . . .	—	1·25	3·3	—	—	—	—	—
„ unilateral . . . . .	1·1	—	3·3	—	4·4	2·94	—	5·0
Foci of softening . . . . .	2·2	—	13·3	—	2·2	—	—	—
Hæmorrhages . . . . .	2·2	1·25	3·3	—	2·2	—	—	5·0
Tumours . . . . .	—	1·25	—	—	—	—	—	—
Pus . . . . .	—	—	3·3	—	—	—	—	—
Fourth ventricle, softened floor . . . . .	1·1	—	3·3	2·43	—	—	—	—
Fourth ventricle, granular pendyma . . . . .	30·0	10·0	10·0	12·19	6·6	11·43	9·75	5·0

TABLE VII.—*Continued.*  
*Weights of the Brain, etc. (in Grammes).*

	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
Whole brain . . . .	1263	1378	1406·5	1327	1310	1355·5	1555	1174
Right hemisphere . . . .	528·5	574·5	585	567	576	589·5	626	546
Left hemisphere . . . .	538	545·5	543	562	566	586·5	624·5	546
Cerebellum . . . .	150	152	144	148	138	149	153	138
Ponto-bulb . . . .	27	26	26	28·5	26	26·5	29	24·5
Skull-cap . . . .	382	373	402	409	404	384	389	323
Cerebro-spinal fluid (in ounces)	5·5	4·5	5	5·5	3	3	3·5	2·5

  

<i>Breaking Strain of the Ribs (in Pounds).</i>								
Convexity . . . .	46·5	37·5	33	27	42	36	37	49
Concavity . . . .	42	36·5	33	25·5	37·5	36	45	62·5

### III. THE WEIGHTS OF THE BRAIN AND ITS COMPONENT PARTS.

The weights of the brain and its component parts, of the skull-cap and body organs (in grammes), and the measurement of the cerebro-spinal fluid (in ounces), have been taken in all the cases upon which this paper is based. At the time this work was initiated, it was believed not to have been previously undertaken, but more recent research has shown that much time has been devoted to the consideration of the brain weights by various observers.

Crochley Clapham has contributed two lengthy and exhaustive papers on this subject, the first of which<sup>1</sup> had the disadvantage that the weights were expressed in ounces. In his second paper,<sup>2</sup> however, all the former work was revised and added to that comprising the new material, the weights being reckoned in grammes.

No less than 1,200 cases were dealt with in this work—rather more than three times the number at present under consideration. It is, however, thought worth while to record our researches, because, although they differ somewhat from the results obtained in the above-mentioned investigations,<sup>1, 2</sup> a fair number of observations have been required, and, in dealing with such large numbers of figures, the same results could scarcely be anticipated in any two instances.

The body organs may be omitted from present consideration, and the remaining weights, with the measurements of the cerebro-spinal

<sup>1</sup> "The Weight of the Brain in the Insane," *West Riding Asylum Reports*, 1873, pp. 284-297.

<sup>2</sup> *Ibid.*, 1876, pp. 11-26.



fluid, will be found at the end of the comparative pathological tables in Part II. (Table VII.). Fractions of less than half a gramme and half a fluid ounce have been omitted.

Attention may be drawn to the weights of the two cerebral hemispheres when compared together. It has already been stated that we consider it possible to divide a symmetrical brain into halves differing from one another by less than 10 grms., and this statement will be amply upheld by perusal of the figures in our tables. These show that only in two out of the eight subclasses did the average weights of the hemispheres vary by more than the amount mentioned.

It has been thought desirable to add the following table, which compares the weights of the whole brain, as given in the above articles,<sup>1 2</sup> with the results obtained in the present series of investigations. In the case of senile dementia, the acute psychoses, and general paralysis, our weights vary only by a few grammes from those given by Crochley Clapham; but in the remaining subclasses a much larger difference will be observed. Owing to the dissimilar methods by which the results have been obtained, it is practically impossible to derive any further useful comparisons from the two series of weights.

TABLE VIII.—*Comparing the Total Brain Weights, as obtained by Crochley Clapham and the present Writer, for both Sexes in the various Clinical Classes.*

	Crochley Clapham.	Present Series.
General paralysis . . . . .	1270·271	1246
Dementia . . . . .	1310·956	1288
Organic dementia . . . . .	1291·949	1384·5
Senile dementia . . . . .	1278·382	1280·5
Epileptic insanity . . . . .	1314·410	1283
Acute psychoses . . . . .	1350·425	1326
Chronic psychoses . . . . .	1327·267	1261
Imbecility and idiocy . . . . .	1217·018	1123

#### IV. THE BREAKING STRAIN OF THE RIBS.

Adjoining the brain weights (Table VII.) will be found the breaking strains of the ribs, as tested by Mercier's instrument, and it will be at once noted how much the strength of these bones was

<sup>1</sup> *Op. cit.*, pp. 284-297.

<sup>2</sup> *Op. cit.*, pp. 11-26.

diminished. Campbell<sup>1</sup> found that normal ribs broke with a pressure of 45·5 lb. against the convexity, and 47·5 lb. against the concavity for both sexes. If all forms of insanity be considered together, our corresponding numbers would be 29 lb. for the convexity, and 30 lb. for the concavity, whilst Campbell's figures were 30·86 lb. for the convexity and 31·52 lb. for the concavity, clearly establishing the increased frangibility of the ribs amongst the insane. Meyer<sup>2</sup> states amongst other results that—

1. "Women's ribs in general were more fragile than men's." This has been amply proved by the present investigations, though the actual results are not shown here.

2. "Frangibility and simple atrophy were observed in a large number of ribs from the insane." This is confirmed.

3. "Costal atrophy was not specially frequent or particularly great in degree in cases of paralysis." This we are thoroughly able to endorse, and reference to Table VII. will show that the ribs of our paralytics were stronger than those of any other class, with the exception of imbeciles and idiots.

4. "Fragility of the ribs was not so great in paralytics as in old demented, and scarcely exceeded that in cachectic sane individuals. When present in paralytics it was always associated with great bodily decay." These statements are likewise borne out by our researches.

5. "In ribs from the non-insane, frangibility increased with age, and especially in chronic wasting diseases." The weakest bones in our patients were found in senile demented, so that Meyer's statement holds good also for the insane population.

In concluding this paper it may be mentioned that about one-twentieth of the material originally collected is embodied in the foregoing pages, and the principal difficulty experienced has been in reducing this unwieldy mass of information to reasonable limits.

<sup>1</sup> "The Breaking Strain of the Ribs in the Insane," *Journ. Ment. Sc.*, London, 1895 pp. 254-270.

<sup>2</sup> *Neurol. Centralbl.*, Leipzig, 1897, No. 20.

I.—ALL FORMS OF INSANITY.

## ALL FORMS OF INSANITY.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	—	61·56	38·44
Average age at death . . . . .	49 ys. 8 m.	48 ys. 6 m.	51 ys. 3 m.
<b>1. SCALP—</b>			
Lesions . . . . .	3·63	4·58	2·06
New growths . . . . .	1·29	·83	2·06
<b>2. SKULL CAP—</b>			
Size, large . . . . .	4·15	5·41	2·06
„ average . . . . .	81·54	84·17	77·24
„ small . . . . .	14·29	10·42	20·69
Thickness, increased . . . . .	40·77	39·17	43·45
„ average . . . . .	36·88	38·75	33·79
„ diminished . . . . .	22·34	22·08	22·76
Density, increased . . . . .	42·08	43·33	40·00
„ average . . . . .	34·29	34·17	34·48
„ diminished . . . . .	23·63	22·5	25·52
Shape, dolico-cephalic . . . . .	12·5	12·14	13·11
„ meso-cephalic . . . . .	77·6	76·16	80·00
„ brachio-cephalic . . . . .	9·89	11·72	6·89
Symmetrical . . . . .	50·65	51·25	49·66
Asymmetrical . . . . .	49·35	48·75	50·34
Vascularity, congested . . . . .	27·53	25·00	31·73
„ average . . . . .	62·86	65·82	57·93
„ anæmic . . . . .	9·61	9·17	10·34
Vascular channels, number, increased . . . . .	21·82	19·17	26·21
„ „ „ average . . . . .	59·22	61·25	55·86
„ „ „ diminished . . . . .	18·96	19·58	17·93
„ „ „ depth, increased . . . . .	22·59	19·58	27·59
„ „ „ average . . . . .	58·18	60·00	55·18
„ „ „ diminished . . . . .	19·22	20·42	17·23
Ossification, deficient . . . . .	11·19	12·08	11·04
Fractures, recent or remote . . . . .	·25	·41	—
New growths . . . . .	·25	—	·68
<b>3. SKULL BASE—</b>			
Fossæ, symmetrical . . . . .	86·23	85·84	86·9
„ asymmetrical . . . . .	13·77	14·16	13·1
Pituitary fossa, deep . . . . .	9·61	9·16	10·34
„ „ „ average . . . . .	69·62	68·33	71·72
„ „ „ shallow . . . . .	20·78	22·5	17·94
Clivus, steep . . . . .	17·14	14·94	20·83
„ average . . . . .	67·79	65·98	70·84
„ shelving . . . . .	15·07	19·08	8·33
<b>4. BASAL VESSELS—</b>			
Normal size and arrangement . . . . .	74·02	70·00	80·68







	Both Sexes.	Males.	Females.
<b>4. BASAL VESSELS—</b>			
Abnormal size . . . . .	25·2	29·17	18·62
„ arrangement . . . . .	3·11	3·33	2·75
Atheroma, commencing . . . . .	19·22	19·58	18·62
„ moderate . . . . .	23·12	24·17	21·38
„ very marked . . . . .	18·18	18·75	17·24
Aneurysmal dilatation . . . . .	3·11	2·91	3·44
Congestion . . . . .	3·37	5·41	—
<b>5. CHOROID PLEXUSES—</b>			
Normal . . . . .	72·4	70·42	75·7
Cystic degeneration . . . . .	16·41	15·42	18·06
Tumours . . . . .	·26	·41	—
Earthy deposit . . . . .	3·91	5·00	2·08
Congestion . . . . .	10·42	11·25	9·02
<b>6. DURA MATER—</b>			
Thickness, normal . . . . .	59·74	56·25	65·52
„ increased . . . . .	40·26	43·75	34·48
Vascularity, congested . . . . .	27·53	29·17	24·83
„ normal . . . . .	63·89	62·5	66·21
„ anemic . . . . .	8·57	8·33	8·96
Adhesion to cap, slight . . . . .	8·83	10·00	6·89
„ „ marked . . . . .	24·94	28·33	19·31
„ „ absent . . . . .	66·24	61·66	73·79
Pachionian bodies, normal . . . . .	98·42	97·92	99·32
„ „ abnormal . . . . .	1·55	2·08	·68
Rusty on inner surface . . . . .	3·11	3·33	2·75
Extravasation of blood between cap, etc. . . . .	4·67	7·5	1·37
Ossification . . . . .	1·03	·83	1·37
Tumours . . . . .	1·03	·83	1·37
<b>7. SINUSES—</b>			
Normal size and arrangement . . . . .	87·8	85·42	91·74
Abnormal size . . . . .	11·69	14·17	7·58
„ arrangement . . . . .	·51	·41	·68
Thrombosis . . . . .	25·2	26·25	23·45
Rupture . . . . .	·51	·83	—
<b>8. PIA-ARACHNOID—</b>			
Thickness, normal . . . . .	29·61	21·67	42·76
„ moderately increased . . . . .	50·4	53·75	44·82
„ excessively increased . . . . .	20·00	24·58	12·42
Opacity, universal . . . . .	14·8	19·17	7·58
„ moderate . . . . .	47·79	48·33	46·9
„ absent . . . . .	37·4	32·5	45·52
Vascularity, congested . . . . .	45·2	50·21	36·81
„ average . . . . .	49·08	44·81	56·25
„ anemic . . . . .	5·71	4·98	6·94
Adhesions (a) to dura, slight . . . . .	18·18	17·92	18·62
„ „ marked . . . . .	23·9	29·17	15·17
„ „ absent . . . . .	57·92	52·91	66·21
„ (b) to cortex, slight . . . . .	9·34	10·00	8·27
„ „ marked . . . . .	13·51	15·00	11·04
„ „ universal . . . . .	12·47	15·42	7·58
„ „ absent . . . . .	64·67	59·58	73·1
Arachnoid cysts . . . . .	5·19	5·00	5·51
Excess of fluid . . . . .	60·78	65·82	52·41
Semi-gelatinous fluid . . . . .	3·37	3·33	3·44
Pus . . . . .	·77	·41	1·37
Tumours . . . . .	·51	·41	·68
Tuberculosis . . . . .	·25	·41	—
<b>9. CEREBRUM—</b>			
Hemispheres, equal . . . . .	80·00	78·34	82·76
„ unequal . . . . .	20·00	21·66	17·24
Lobes, symmetrical . . . . .	85·44	85·84	84·82
„ asymmetrical . . . . .	14·55	14·16	15·18

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convulsions type—simple . . . . .	17·66	18·33	16·55
„ „ normal . . . . .	81·64	80·00	82·76
„ „ complex . . . . .	1·29	1·66	·68
„ nutrition, normal . . . . .	34·55	28·33	44·83
„ „ wasted . . . . .	65·45	71·66	55·17
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	28·16	21·61	38·88
„ „ atrophied . . . . .	71·84	78·38	61·12
Vascularity, congested . . . . .	24·48	27·12	20·14
„ „ average . . . . .	52·37	51·26	54·17
„ „ anæmic . . . . .	23·16	21·61	25·69
Foci of softening . . . . .	6·84	6·35	7·58
Œdema . . . . .	40·00	45·76	32·41
Effusion of blood . . . . .	1·57	1·69	1·39
Tumours . . . . .	2·1	2·54	1·39
Tuberculosis . . . . .	·52	·84	—
11. WHITE SUBSTANCE—			
Induration . . . . .	1·32	·85	2·08
Œdema . . . . .	41·91	47·21	33·3
Foci of softening . . . . .	6·89	5·57	9·03
Effusion of blood . . . . .	1·32	1·28	1·39
Pus . . . . .	1·32	1·28	1·39
Vascular channels, average . . . . .	37·94	34·77	43·06
„ „ „ dilated . . . . .	40·58	43·77	35·42
„ „ „ anæmic . . . . .	21·48	21·46	21·52
Punctiform hæmorrhages . . . . .	3·18	4·29	1·39
Tumours . . . . .	1·06	1·28	·69
Tuberculosis . . . . .	·53	·85	—
Cysts . . . . .	·26	·42	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	·26	—	·69
Tumours . . . . .	·52	·85	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	2·63	3·43	1·39
Punctiform hæmorrhages . . . . .	·52	·42	·69
Foci of softening . . . . .	4·48	4·72	4·16
Tumours . . . . .	·26	·42	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	45·92	48·92	41·67
„ „ excessive . . . . .	11·61	13·74	8·27
Excess of fluid . . . . .	50·93	57·08	41·67
Granular ependyma . . . . .	13·46	16·74	8·27
Hæmorrhage into ventricles . . . . .	1·04	1·28	·69
Pus in ventricles . . . . .	·52	·42	·69
Tumours . . . . .	1·31	2·14	—
15. MESENCEPHALON—			
Itcr, normal . . . . .	46·83	39·14	59·45
„ „ dilated . . . . .	53·17	60·85	40·55
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	9·23	11·02	6·29
Normal . . . . .	59·9	52·54	72·04
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	·26	—	·69
Sclerosis . . . . .	·26	—	·69
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Œdema . . . . .	31·14	37·28	20·98
17. CRURA—			
Normal . . . . .	60·69	53·38	72·73







	Both Sexes.	Males.	Females.
17. CRURA—			
Congestion . . . . .	8·7	10·17	6·29
Hæmorrhage . . . . .	·26	·42	—
Foci of softening . . . . .	·26	·42	—
Sclerosis . . . . .	·26	—	·69
Tumours . . . . .	—	—	—
Edema . . . . .	30·87	37·28	20·28
18. OPTIC THALAMI—			
Normal . . . . .	96·55	97·42	96·45
Hæmorrhage . . . . .	·79	1·27	—
Punctiform hæmorrhage . . . . .	·26	·42	—
Foci of softening . . . . .	1·58	·85	2·79
Tumours . . . . .	—	—	—
Sclerosis . . . . .	·52	·42	·69
19. OPTIC NERVES—			
Normal . . . . .	98·68	98·73	98·6
Atrophy . . . . .	1·04	1·27	·7
Sclerosis . . . . .	·26	—	·7
20. PITUITARY BODY—			
Size, increased . . . . .	2·91	3·83	1·39
„ normal . . . . .	88·88	89·78	87·41
„ diminished . . . . .	8·20	6·38	11·2
Structure, normal . . . . .	87·04	88·08	85·32
„ softened . . . . .	12·96	11·91	14·68
21. CEREBELLUM—			
Membranes, congested . . . . .	27·63	26·58	29·37
„ normal . . . . .	67·63	68·78	65·74
„ anæmic . . . . .	4·73	4·64	4·89
„ adherent . . . . .	12·63	13·86	11·57
„ non-adherent . . . . .	87·37	86·14	89·43
Hemispheres, equal . . . . .	97·62	98·3	96·5
„ unequal . . . . .	2·37	1·69	3·5
Lobes, symmetrical . . . . .	97·62	98·3	96·5
„ asymmetrical . . . . .	2·37	1·69	3·5
Cortex, normal . . . . .	77·12	78·06	75·53
„ atrophied . . . . .	22·88	21·94	24·47
Hæmorrhages . . . . .	·78	·84	·69
Punctiform hæmorrhages . . . . .	·52	·42	·69
Foci of softening . . . . .	2·36	2·53	2·09
Pus . . . . .	·52	·42	·69
Edema . . . . .	30·00	35·87	20·28
Tumours . . . . .	·78	·84	·69
Tuberclosis . . . . .	·26	·42	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	60·37	57·57	65·04
„ „ atheromatous . . . . .	39·63	42·43	34·96
„ „ aneurysmal dilatation . . . . .	2·62	2·1	3·49
Membranes, normal . . . . .	73·44	71·06	77·63
„ congested . . . . .	22·42	25·22	17·48
„ anæmic . . . . .	4·12	3·71	4·89
Atrophy, general . . . . .	·52	·84	—
„ unilateral . . . . .	1·31	·84	2·09
Congestion . . . . .	20·73	23·53	16·08
Foci of softening . . . . .	1·57	1·26	2·09
Hæmorrhages . . . . .	·26	·42	—
Punctiform hæmorrhages . . . . .	1·57	1·26	2·09
Tumours . . . . .	·26	·42	—
Pus . . . . .	·26	—	·69
Softened floor to fourth ventricle . . . . .	·78	·84	·69
Granular ependyma . . . . .	14·43	17·65	9·09
23. SPINAL CORD—			
Membranes, congested . . . . .	2	2	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Membranes, normal . . . . .	4	3	1
"    anæmic . . . . .	—	—	—
Pus . . . . .	1	—	1
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	2	2	—
Congestion . . . . .	1	1	—
Substance, softening . . . . .	—	—	—
"    sclerosis . . . . .	2	2	—
"    tumour . . . . .	—	—	—
"    lesion . . . . .	1	1	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	1	—	1
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1298	1344	1219
"    right hemisphere . . . . .	549	568·5	518
"    left hemisphere . . . . .	542	559·5	513
"    cerebellum . . . . .	141·5	146·5	134·5
"    ponto-bulb . . . . .	27	28	25·5
"    skull-cap . . . . .	376	381·5	366
"    fluid (in ounces) . . . . .	5iv.	5iv.ss.	5iii.
Body, heart (in grammes) . . . . .	301·5	325	264
"    right lung . . . . .	590	615·5	525
"    left lung . . . . .	545	632	418
"    liver . . . . .	1277	1327	1198
"    spleen . . . . .	139	149·5	131·5
"    right kidney . . . . .	122·5	130·5	109
"    left kidney . . . . .	130	137	119
"    pancreas . . . . .	—	—	—
"    right adrenal . . . . .	9	9	8
"    left adrenal . . . . .	12	13	8
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	29	37	16
Concave . . . . .	30	38	15





## II.—GENERAL PARALYSIS.

## GENERAL PARALYSIS.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	23·87	30·21	13·73
Average age at death . . . . .	41 years.	40 ys. 8 m.	42 years.
<b>1. SCALP—</b>			
Lesions . . . . .	2·19	2·81	—
New growths . . . . .	1·09	—	5·00
<b>2. SKULL CAP—</b>			
Size, large . . . . .	3·29	4·16	—
„ average . . . . .	80·22	81·96	70·00
„ small . . . . .	16·49	13·88	30·00
Thickness, increased . . . . .	38·56	32·39	65·00
„ average . . . . .	35·17	38·03	25·00
„ diminished . . . . .	25·27	29·58	10·00
Density, increased . . . . .	36·27	33·80	45·00
„ average . . . . .	41·76	40·85	45·00
„ diminished . . . . .	21·97	25·35	10·00
Shape, dolico-cephalic . . . . .	14·29	14·08	15·00
„ meso-cephalic . . . . .	72·53	71·84	75·00
„ brachio-cephalic . . . . .	13·18	14·08	10·00
Symmetrical . . . . .	50·56	52·12	45·00
Asymmetrical . . . . .	49·44	47·88	55·00
Vascularity, congested . . . . .	28·57	28·17	30·00
„ average . . . . .	60·44	64·79	45·00
„ anæmic . . . . .	10·99	7·04	25·00
Vascular channels, number, increased . . . . .	23·08	21·12	30·00
„ „ „ average . . . . .	56·04	60·57	40·00
„ „ „ diminished . . . . .	20·88	18·31	30·00
„ „ „ depth, increased . . . . .	21·74	20·83	25·00
„ „ „ average . . . . .	57·61	61·11	45·00
„ „ „ „ diminished . . . . .	20·65	18·06	30·00
Ossification, deficient . . . . .	13·18	14·08	10·00
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
<b>3. SKULL BASE—</b>			
Fosse, symmetrical . . . . .	86·82	87·34	85·00
„ asymmetrical . . . . .	13·18	12·67	15·00
Pituitary fossa, deep . . . . .	4·39	2·81	10·00
„ „ average . . . . .	79·12	80·27	75·00
„ „ „ shallow . . . . .	16·49	16·92	15·00
Clivus, steep . . . . .	12·09	9·85	20·00
„ average . . . . .	74·73	73·23	80·00
„ shelving . . . . .	13·18	16·92	—
<b>4. BASAL VESSELS—</b>			
Normal size and arrangement . . . . .	72·53	70·41	80·00







	Both Sexes.	Males.	Females.
4. BASAL VESSELS—			
Abnormal size . . . . .	25·28	28·17	15·00
„ arrangement . . . . .	5·49	5·63	5·00
Atheroma, commencing . . . . .	25·28	25·35	25·00
„ moderate . . . . .	17·58	19·72	10·00
„ very marked . . . . .	10·99	9·86	15·00
Aneurysmal dilatation . . . . .	3·29	2·81	5·00
Congestion . . . . .	2·19	2·81	—
5. CHOROID PLEXUSES—			
Normal . . . . .	71·44	73·23	65·00
Cystic degeneration . . . . .	14·29	12·67	20·00
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	7·69	7·04	10·00
Congestion . . . . .	9·89	11·26	5·00
6. DURA MATER—			
Thickness, normal . . . . .	58·24	60·56	50·00
„ increased . . . . .	41·76	39·44	50·00
Vascularity, congested . . . . .	29·67	30·14	25·00
„ normal . . . . .	63·74	64·38	65·00
„ anæmic . . . . .	6·59	5·48	10·00
Adhesion to cap, slight . . . . .	10·99	12·67	5·00
„ marked . . . . .	18·68	15·49	30·00
„ absent . . . . .	70·33	71·84	65·00
Pacchionian bodies, normal . . . . .	98·91	98·58	C
„ „ abnormal . . . . .	1·09	1·42	—
Rusty on inner surface . . . . .	2·19	2·81	—
Extravasation of blood between cap and dura . . . . .	3·29	2·81	—
Ossification . . . . .	2·19	2·81	—
Tumours . . . . .	1·09	—	5·00
7. SINUSES—			
Normal size and arrangement . . . . .	85·72	81·51	90·00
Abnormal size . . . . .	14·29	15·49	10·00
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	27·47	25·35	35·00
Rupture . . . . .	—	—	—
8. PIA-ARACHNOID—			
Thickness, normal . . . . .	15·38	14·08	20·00
„ moderately increased . . . . .	48·36	53·52	30·00
„ excessively increased . . . . .	36·26	32·40	50·00
Opacity, universal . . . . .	38·46	40·85	30·00
„ moderate . . . . .	46·16	45·07	50·00
„ absent . . . . .	15·38	14·08	20·00
Vascularity, congested . . . . .	53·85	60·56	30·00
„ average . . . . .	38·46	32·40	60·00
„ anæmic . . . . .	7·69	7·04	10·00
Adhesions (a) to dura, slight . . . . .	20·88	21·12	20·00
„ „ marked . . . . .	43·96	42·25	50·00
„ „ absent . . . . .	35·16	36·63	30·00
„ (b) to cortex, slight . . . . .	10·99	11·26	10·00
„ „ marked . . . . .	29·67	26·76	40·00
„ „ universal . . . . .	36·26	39·44	25·00
„ „ absent . . . . .	23·08	22·54	25·00
Arachnoid cysts . . . . .	6·59	7·04	5·00
Excess of fluid . . . . .	81·33	83·10	75·00
Semi-gelatinous fluid . . . . .	2·19	1·40	5·00
Pus . . . . .	1·09	1·40	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
9. CEREBRUM—			
Hemispheres, equal . . . . .	76·93	76·06	80·00
„ unequal . . . . .	23·07	23·94	20·00
Lobes, symmetrical . . . . .	81·33	80·28	85·00
„ asymmetrical . . . . .	18·67	19·72	15·00

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	15·38	14·08	20·00
„ „ normal . . . . .	83·53	84·52	80·00
„ „ complex . . . . .	1·09	1·40	—
„ —nutrition, normal . . . . .	18·67	16·90	25·00
„ „ „ wasted . . . . .	81·33	83·10	75·00
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	10·23	8·82	15·00
„ „ atrophied . . . . .	89·77	91·18	85·00
Vascularity, congested . . . . .	28·41	30·88	20·00
„ „ average . . . . .	47·73	51·47	35·00
„ „ anæmic . . . . .	23·86	17·65	45·00
Foci of softening . . . . .	2·27	2·94	—
Oedema . . . . .	64·77	64·7	65·00
Effusion of blood . . . . .	1·13	1·47	—
Tumours . . . . .	1·13	1·47	—
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Oedema . . . . .	65·92	66·18	65·00
Foci of softening . . . . .	2·27	1·47	5·00
Effusion of blood . . . . .	—	—	—
Pus . . . . .	1·13	1·47	—
Vascular channels, average . . . . .	28·41	27·94	30·00
„ „ „ dilated . . . . .	46·59	50·00	35·00
„ „ „ anæmic . . . . .	25·00	22·06	35·00
Punctiform hæmorrhages . . . . .	2·27	1·47	5·00
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM —			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	1·13	1·47	—
Punctiform hæmorrhages . . . . .	1·13	—	5·00
Foci of softening . . . . .	1·13	—	5·00
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	54·54	54·42	55·00
„ „ excessive . . . . .	26·14	27·94	20·00
Excess of fluid . . . . .	72·74	73·52	70·00
Granular ependyma . . . . .	26·14	27·94	20·00
Hæmorrhage into ventricles . . . . .	—	—	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	—	—	—
15. MESENCEPHALON—			
Iter, normal . . . . .	23·86	20·58	35·00
„ „ „ dilated . . . . .	76·14	79·42	65·00
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	6·81	8·82	—
Normal . . . . .	40·66	41·18	45·00
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Oedema . . . . .	54·54	54·42	55·00
17. CRURA—			
Normal . . . . .	40·66	41·18	45·00
Congestion . . . . .	5·68	7·35	—







	Both Sexes.	Males.	Females.
17. CRURA—			
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Edema . . . . .	54·54	54·42	55·00
18. OPTIC THALAMI—			
Normal . . . . .	C	C	C
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	C	C	C
Atrophy . . . . .	—	—	—
20. PITUITARY BODY—			
Size, increased . . . . .	2·27	2·94	—
,, normal . . . . .	93·19	94·12	90·00
,, diminished . . . . .	4·54	2·94	10·00
Structure, normal . . . . .	88·64	91·18	80·00
,, softened . . . . .	11·36	8·82	20·00
21. CEREBELLUM—			
Membranes, congested . . . . .	30·00	30·00	30·00
,, normal . . . . .	64·44	64·28	65·00
,, anæmic . . . . .	5·56	5·72	5·00
,, adherent . . . . .	23·59	23·19	25·00
,, non-adherent . . . . .	76·41	76·81	75·00
Hemispheres, equal . . . . .	97·77	98·56	95·00
,, unequal . . . . .	2·22	1·44	5·00
Lobes, symmetrical . . . . .	97·77	98·56	95·00
,, asymmetrical . . . . .	2·22	1·44	5·00
Cortex, normal . . . . .	67·77	72·86	50·00
,, atrophied . . . . .	32·22	27·14	50·00
Hæmorrhages . . . . .	1·11	1·44	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	3·33	2·88	5·00
Pus . . . . .	—	—	—
Edema . . . . .	51·11	55·71	35·00
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	63·33	61·43	70·00
,, „ atheromatous . . . . .	36·66	38·57	30·00
,, „ aneurysmal dilatation . . . . .	—	—	—
Membranes, normal . . . . .	63·33	64·27	60·00
,, congested . . . . .	31·11	32·85	25·00
,, anæmic . . . . .	5·56	2·88	15·00
Atrophy, general . . . . .	—	—	—
,, unilateral . . . . .	1·11	—	5·00
Congestion . . . . .	28·89	30·00	25·00
Foci of softening . . . . .	2·22	1·44	5·00
Punctiform hæmorrhages . . . . .	2·22	1·44	5·00
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	1·11	1·44	—
Granular ependyma . . . . .	30·00	28·57	35·00
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
,, normal . . . . .	1	1	—
,, anæmic . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Substance, softening . . . . .	—	—	—
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1246	1263	1152·5
„ right hemisphere . . . . .	520	528·5	479
„ left hemisphere . . . . .	523	538	471
„ cerebellum . . . . .	146	150	133·5
„ ponto-bulb . . . . .	26	27	24
„ skull-cap . . . . .	374	382	370
„ fluid (in ounces) . . . . .	5v.	5v.ss.	5iv.
Body, heart (in grammes) . . . . .	288	297	224·5
„ right lung . . . . .	611	637	510
„ left lung . . . . .	553	613	317
„ liver . . . . .	1291	1330·5	1161
„ spleen . . . . .	132	133	131
„ right kidney . . . . .	130	137	110
„ left kidney . . . . .	136	141	120
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	9·5	9	10
„ left adrenal . . . . .	10	10	10
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	40	46·5	22
Concave . . . . .	36·5	42	19





### III.—SECONDARY DEMENTIA.

## SECONDARY DEMENTIA.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	21·11	17·14	27·45
Average age at death . . . . .	53 ys. 8 m.	53 ys. 4 m.	54 ys. 4 m.
<b>1. SCALP—</b>			
Lesions . . . . .	1·23	2·43	—
New growths . . . . .	2·47	4·87	—
<b>2. SKULL CAP—</b>			
Size, large . . . . .	4·93	7·31	2·5
„ average . . . . .	86·43	90·26	82·5
„ small . . . . .	8·64	2·43	15·00
Thickness, increased . . . . .	43·21	46·34	40·00
„ average . . . . .	35·80	31·71	40·00
„ diminished . . . . .	20·99	21·95	20·00
Density, increased . . . . .	43·21	53·66	32·5
„ average . . . . .	29·62	26·83	32·5
„ diminished . . . . .	27·17	19·51	35·00
Shape, dolico-cephalic . . . . .	13·58	9·75	17·500
„ meso-cephalic . . . . .	79·02	78·05	80·00
„ brachio-cephalic . . . . .	7·40	12·19	2·50
Symmetrical . . . . .	49·38	53·66	45·00
Asymmetrical . . . . .	50·62	46·34	55·00
Vascularity, congested . . . . .	32·09	21·95	42·50
„ average . . . . .	62·98	70·74	55·00
„ anæmic . . . . .	4·93	7·31	2·50
Vascular channels, number, increased . . . . .	20·99	19·51	22·50
„ „ „ average . . . . .	60·49	56·11	65·00
„ „ „ diminished . . . . .	18·52	24·38	12·50
„ „ „ depth, increased . . . . .	22·22	19·51	25·00
„ „ „ average . . . . .	60·49	58·54	62·50
„ „ „ diminished . . . . .	17·29	21·95	12·50
Ossification, deficient . . . . .	9·87	4·87	15·00
Fractures, recent or remote . . . . .	2·47	2·43	—
New growths . . . . .	—	—	—
<b>3. SKULL BASE—</b>			
Fossæ, symmetrical . . . . .	85·18	85·36	85·00
„ asymmetrical . . . . .	14·82	14·64	15·00
Pituitary fossa, deep . . . . .	14·82	7·31	22·50
„ „ average . . . . .	72·84	73·18	72·50
„ „ shallow . . . . .	12·34	19·51	5·00
Clivus, steep . . . . .	19·75	9·75	30·00
„ average . . . . .	71·61	75·61	67·50
„ shelving . . . . .	8·64	14·64	2·50
<b>4. BASAL VESSELS—</b>			
Normal size and arrangement . . . . .	72·84	68·29	77·50







	Both Sexes.	Males.	Females.
4. BASAL VESSELS—			
Abnormal size . . . . .	33·33	31·71	22·50
„ arrangement . . . . .	1·23	2·43	—
Atheroma, commencing . . . . .	16·05	14·64	17·50
„ moderate . . . . .	28·39	34·15	22·50
„ very marked . . . . .	27·17	29·27	25·00
Aneurysmal dilatation . . . . .	3·7	4·87	2·50
Congestion . . . . .	4·93	9·75	—
5. CHOROID PLEXUSES—			
Normal . . . . .	73·74	68·29	79·50
Cystic degeneration . . . . .	17·5	19·51	15·37
Tumours . . . . .	1·25	2·43	—
Earthy deposit . . . . .	2·5	4·87	—
Congestion . . . . .	5·0	4·87	5·13
6. DURA MATER—			
Thickness, normal . . . . .	56·78	48·77	65·00
„ increased . . . . .	43·22	51·23	35·00
Vascularity, congested . . . . .	25·92	21·95	30·00
„ normal . . . . .	61·74	63·41	60·00
„ anemic . . . . .	12·34	14·64	10·00
Adhesion to cap, slight . . . . .	8·64	9·75	7·50
„ „ marked . . . . .	19·75	31·71	7·50
„ „ absent . . . . .	71·61	58·54	85·00
Pachionian bodies, normal . . . . .	C	C	C
„ „ abnormal . . . . .	—	—	—
Rusty on inner surface . . . . .	3·7	4·87	2·50
Extravasation of blood between cap and dura . . . . .	6·17	12·19	—
Ossification . . . . .	2·47	—	5·00
Tumours . . . . .	1·23	2·43	—
7. SINUSES—			
Normal size and arrangement . . . . .	88·8	87·81	90·00
Abnormal size . . . . .	11·1	12·19	10·00
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	25·92	29·27	22·50
Rupture . . . . .	1·23	2·43	—
8. PIA-ARACHNOID—			
Thickness, normal . . . . .	34·57	21·95	47·50
„ moderately increased . . . . .	48·15	53·66	42·50
„ excessively increased . . . . .	17·28	24·38	10·00
Opacity, universal . . . . .	7·40	7·31	7·50
„ moderate . . . . .	50·62	51·23	50·00
„ absent . . . . .	41·98	41·46	42·50
Vascularity, congested . . . . .	35·82	31·71	40·00
„ average . . . . .	56·78	60·98	52·50
„ anemic . . . . .	7·40	7·31	7·50
Adhesions (a) to dura, slight . . . . .	19·75	17·08	22·50
„ „ marked . . . . .	13·58	19·51	7·50
„ „ absent . . . . .	66·6	63·41	70·00
„ (b) to cortex, slight . . . . .	9·87	12·19	7·50
„ „ marked . . . . .	9·87	9·75	10·00
„ „ universal . . . . .	1·23	—	2·50
„ „ absent . . . . .	79·03	78·06	80·00
Arachnoid cysts . . . . .	6·17	2·43	10·00
Excess of fluid . . . . .	67·89	73·18	62·50
Semi-gelatinous fluid . . . . .	4·93	4·87	5·00
Pus . . . . .	—	—	—
Tumours . . . . .	1·23	2·43	—
Tuberculosis . . . . .	1·23	2·43	—
9. CEREBRUM—			
Hemispheres, equal . . . . .	91·36	85·36	97·50
„ unequal . . . . .	8·64	14·64	2·50
Lobes, symmetrical . . . . .	93·83	92·69	95·00
„ asymmetrical . . . . .	6·17	7·31	5·00

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	14·82	9·75	20·00
"          "          normal . . . . .	85·18	90·25	80·00
"          "          complex . . . . .	—	—	—
"          "          nutrition, normal . . . . .	35·82	29·26	42·50
"          "          wasted . . . . .	64·18	70·74	57·50
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	27·5	19·51	35·90
"          atrophied . . . . .	72·5	80·49	64·10
Vascularity, congested . . . . .	13·75	12·19	15·38
"          average . . . . .	60·00	58·55	61·54
"          anæmic . . . . .	26·25	29·26	23·08
Foci of softening . . . . .	1·25	2·43	—
Edema . . . . .	38·75	41·46	35·90
Effusion of blood . . . . .	1·25	2·43	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Edema . . . . .	41·25	46·34	35·90
Foci of softening . . . . .	1·25	2·43	—
Effusion of blood . . . . .	1·25	2·43	—
Pus . . . . .	1·25	2·43	—
Vascular channels, average . . . . .	39·75	35·89	43·59
"          "          dilated . . . . .	38·45	41·02	35·90
"          "          anæmic . . . . .	21·8	23·09	20·51
Punctiform hæmorrhages . . . . .	6·25	12·19	—
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	2·5	2·43	2·56
Foci of softening . . . . .	6·25	7·31	5·12
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	55·00	58·55	51·28
"          excessive . . . . .	7·5	9·75	5·12
Excess of fluid . . . . .	57·50	68·29	46·15
Granular ependyma . . . . .	11·25	14·64	7·69
Hæmorrhage into ventricles . . . . .	—	—	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	1·25	2·43	—
15. MESENCEPHALON—			
Iter, normal . . . . .	50·00	41·46	58·97
"          dilated . . . . .	50·00	58·54	41·03
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	8·64	9·75	7·69
Normal . . . . .	66·6	63·41	71·81
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Edema . . . . .	24·69	29·27	20·51
17. CRURA—			
Normal . . . . .	70·37	63·41	79·50
Congestion . . . . .	6·17	9·75	2·56
Hæmorrhage . . . . .	—	—	—







	Both Sexes.	Males.	Females.
17. CRURA—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Edema . . . . .	23·46	29·27	17·94
18. OPTIC THALAMI—			
Normal . . . . .	97·5	97·57	97·44
Punctiform hæmorrhages . . . . .	1·25	2·43	—
Foci of softening . . . . .	1·25	—	2·56
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	98·75	97·57	C
Atrophy . . . . .	1·25	2·43	—
20. PITUITARY BODY—			
Size, increased . . . . .	3·75	4·87	2·56
„ normal . . . . .	83·75	82·94	84·60
„ diminished . . . . .	12·5	12·19	12·84
Stricture, normal . . . . .	81·25	80·49	82·06
„ softened . . . . .	18·75	19·51	17·94
21. CEREBELLUM—			
Membranes, congested . . . . .	20·00	9·75	30·78
„ normal . . . . .	73·75	82·94	64·10
„ anæmie . . . . .	6·25	7·31	5·12
„ adherent . . . . .	8·75	9·75	7·69
„ non-adherent . . . . .	91·25	90·25	92·31
Hemispheres, equal . . . . .	C	C	C
„ unequal . . . . .	—	—	—
Lobes, symmetrical . . . . .	C	C	C
„ asymmetrical . . . . .	—	—	—
Cortex, normal . . . . .	75·00	80·49	69·22
„ atrophied . . . . .	25·00	19·51	30·78
Hæmorrhages . . . . .	1·25	—	2·56
Punctiform hæmorrhages . . . . .	1·25	—	2·56
Foci of softening . . . . .	1·25	—	2·56
Pus . . . . .	—	—	—
Edema . . . . .	28·75	31·71	25·64
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	1·25	2·43	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	55·00	48·77	61·53
„ „ atheromatous . . . . .	45·00	51·23	38·47
„ „ aneurysmal dilatation . . . . .	5·00	4·87	5·12
Membranes, normal . . . . .	77·50	73·18	82·04
„ congested . . . . .	13·75	17·08	10·27
„ anæmie . . . . .	8·75	9·74	7·69
Atrophy, general . . . . .	1·25	2·43	—
„ unilateral . . . . .	—	—	—
Congestion . . . . .	12·5	14·64	10·27
Foci of softening . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	1·25	—	2·56
Tumours . . . . .	1·25	2·43	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	—	—	—
Granular ependyma . . . . .	10·00	17·08	2·5
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
„ normal . . . . .	1	1	—
„ anæmie . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	1	1	—
Congestion . . . . .	—	—	—
Substance, softening . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	1	1	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1288	1378	1213
„ right hemisphere . . . . .	550	574·5	523
„ left hemisphere . . . . .	530	545·5	517
„ cerebellum . . . . .	143	152	137
„ ponto-bulb . . . . .	26	26	26
„ skull-cap . . . . .	368	373	348
„ fluid (in ounces) . . . . .	3iv.	3iv.ss.	3iii.
Body, heart (in grammes) . . . . .	288	332	249
„ right lung . . . . .	608	728	498
„ left lung . . . . .	517	683	395
„ liver . . . . .	1238	1396	1078
„ spleen . . . . .	137	169	113
„ right kidney . . . . .	112	128	98
„ left kidney . . . . .	122	139	106
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	10	—
„ left adrenal . . . . .	—	14	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	25·5	37·5	11
Concave . . . . .	25	36·5	10





#### IV.—ORGANIC DEMENTIA.

# ORGANIC DEMENTIA.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	7·53	7·34	7·84
Average age at death . . . . .	59 ys. 3 m.	58 years.	59 ys. 9 m.
1. SCALP—			
Lesions . . . . .	6·6	5·5	8·3
New growths . . . . .	3·3	—	8·3
2. SKULL CAP—			
Size, large . . . . .	3·3	—	8·3
„ average . . . . .	93·3	C	83·3
„ small . . . . .	3·3	—	8·3
Thickness, increased . . . . .	33·3	44·4	16·6
„ average . . . . .	46·6	38·8	58·3
„ diminished . . . . .	20·00	16·6	25·00
Density, increased . . . . .	30·00	38·8	16·6
„ average . . . . .	43·3	44·4	41·6
„ diminished . . . . .	26·6	16·6	41·6
Shape, dolico-cephalic . . . . .	13·3	11·1	16·6
„ meso-cephalic . . . . .	73·3	72·2	75·00
„ brachio-cephalic . . . . .	13·3	16·6	8·3
Symmetrical . . . . .	63·3	66·6	58·3
Asymmetrical . . . . .	36·6	33·3	41·6
Vascularity, congested . . . . .	20·00	22·2	16·6
„ average . . . . .	76·6	83·3	75·00
„ anæmic . . . . .	3·3	—	8·3
Vascular channels, number, increased . . . . .	33·3	33·3	33·3
„ „ „ average . . . . .	63·3	61·1	66·6
„ „ „ diminished . . . . .	3·3	5·5	—
„ „ „ depth, increased . . . . .	40·00	44·4	33·3
„ „ „ average . . . . .	56·6	50·00	66·6
„ „ „ diminished . . . . .	3·3	5·5	—
Ossification, deficient . . . . .	20·00	16·6	25·00
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
3. SKULL BASE—			
Fossæ, symmetrical . . . . .	93·3	88·8	C
„ asymmetrical . . . . .	6·6	11·1	—
Pituitary fossa, deep . . . . .	3·3	5·5	—
„ „ average . . . . .	70·00	61·1	83·3
„ „ shallow . . . . .	26·6	33·3	16·6
Clivus, steep . . . . .	6·6	11·1	—
„ average . . . . .	80·00	72·2	91·6
„ shelving . . . . .	13·3	16·6	8·3
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	56·6	61·1	50·00







	Both Sexes.	Males.	Females.
<b>4. BASAL VESSELS—</b>			
Abnormal size . . . . .	40·00	38·8	41·6
„ arrangement . . . . .	6·6	—	16·6
Atheroma, commencing . . . . .	26·6	22·2	33·3
„ moderate . . . . .	30·00	27·7	33·3
„ very marked . . . . .	36·6	44·4	25·00
Aneurysmal dilatation . . . . .	3·3	—	8·3
Congestion . . . . .	3·3	5·5	—
<b>5. CHOROID PLEXUSES—</b>			
Normal . . . . .	60·00	61·1	58·3
Cystic degeneration . . . . .	20·00	16·6	25·00
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	13·3	16·6	8·3
Congestion . . . . .	13·3	22·2	—
<b>6. DURA MATER—</b>			
Thickness, normal . . . . .	66·6	61·1	75·00
„ increased . . . . .	33·3	38·8	25·00
Vascularity, congested . . . . .	16·6	27·7	—
„ normal . . . . .	76·6	72·2	83·3
„ anæmic . . . . .	6·6	—	16·6
Adhesion to cap, slight . . . . .	13·3	16·6	8·3
„ „ marked . . . . .	26·6	38·8	8·3
„ „ absent . . . . .	60·00	44·4	83·3
Pachionian tubes, normal . . . . .	96·6	94·4	C
„ „ abnormal . . . . .	3·3	5·5	—
Rusty on inner surface . . . . .	—	—	—
Extravasation of blood between pia and dura . . . . .	6·6	5·5	8·3
Ossification . . . . .	—	—	—
Tumours . . . . .	—	—	—
<b>7. SINUSES—</b>			
Normal size and arrangement . . . . .	C	C	C
Abnormal size . . . . .	—	—	—
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	13·3	16·6	8·3
Rupture . . . . .	—	—	—
<b>8. PIA-ARACHNOID—</b>			
Thickness, normal . . . . .	23·3	33·3	8·3
„ moderately increased . . . . .	60·00	44·4	83·3
„ excessively increased . . . . .	16·6	22·2	8·3
Opacity, universal . . . . .	13·3	22·2	—
„ moderate . . . . .	56·6	38·8	83·3
„ absent . . . . .	30·00	38·8	16·6
Vascularity, congested . . . . .	46·6	50·00	41·6
„ average . . . . .	50·00	50·00	50·00
„ anæmic . . . . .	3·3	—	8·3
Adhesions (a) to dura, slight . . . . .	20·00	11·1	33·3
„ „ marked . . . . .	20·00	27·7	8·3
„ „ absent . . . . .	60·00	61·1	58·3
„ (b) to cortex, slight . . . . .	20·00	16·6	25·00
„ „ marked . . . . .	10·00	5·5	16·6
„ „ universal . . . . .	16·6	16·6	16·6
„ „ absent . . . . .	53·3	61·1	41·6
Arachnoid cysts . . . . .	6·6	5·5	8·3
Excess of fluid . . . . .	70·00	61·1	83·3
Semi-gelatinous fluid . . . . .	10·00	11·1	8·3
Pus . . . . .	3·3	—	8·3
Tumours . . . . .	3·3	5·5	—
Tuberculosis . . . . .	—	—	—
<b>9. CEREBRUM—</b>			
Hemispheres, equal . . . . .	53·3	55·5	50·00
„ unequal . . . . .	46·6	44·4	50·00
Lobes, symmetrical . . . . .	70·00	83·3	50·00
„ asymmetrical . . . . .	30·00	16·6	50·00

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	6·6	11·1	—
„ „ normal . . . . .	86·6	83·3	91·6
„ „ complex . . . . .	6·6	5·5	8·3
„ nutrition, normal . . . . .	20·00	16·6	25·00
„ „ wasted . . . . .	80·00	83·3	75·00
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	23·3	16·6	33·3
„ atrophied . . . . .	76·6	83·3	66·6
Vascularity, congested . . . . .	33·3	38·8	25·00
„ average . . . . .	43·3	44·4	41·6
„ anæmic . . . . .	23·3	16·6	33·3
Foci of softening . . . . .	46·6	33·3	66·6
Oedema . . . . .	56·6	55·5	58·3
Effusion of blood . . . . .	13·3	11·1	16·6
Tumours . . . . .	10·00	16·6	—
Tuberculosis . . . . .	3·3	5·5	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Oedema . . . . .	60·00	55·5	66·6
Foci of softening . . . . .	43·3	27·7	66·6
Effusion of blood . . . . .	10·00	5·5	16·6
Pus . . . . .	6·6	5·5	8·3
Vascular channels, average . . . . .	26·6	22·2	33·3
„ „ dilated . . . . .	50·00	55·5	41·6
„ „ anæmic . . . . .	23·3	22·2	25·00
Tumours . . . . .	10·00	16·6	—
Tuberculosis . . . . .	3·3	5·5	—
Cysts . . . . .	3·3	5·5	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	3·3	—	8·3
Tumours . . . . .	6·6	11·1	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	16·6	22·2	8·3
Foci of softening . . . . .	20·00	22·2	16·6
Tumours . . . . .	3·3	5·5	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	46·6	38·8	58·3
„ excessive . . . . .	26·6	33·3	16·6
Excess of fluid . . . . .	66·6	61·1	75·00
Granular ependyma . . . . .	3·3	—	8·3
Hæmorrhage into ventricles . . . . .	6·6	5·5	8·3
Pus in ventricles . . . . .	3·3	—	8·3
Tumours . . . . .	6·6	11·1	—
15. MESENCEPHALON—			
Iter, normal . . . . .	30·00	38·8	16·6
„ dilated . . . . .	70·00	61·1	83·3
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	16·6	22·2	8·3
Normal . . . . .	46·6	44·4	50·00
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Oedema . . . . .	36·6	33·3	41·6
17. CRURA—			
Normal . . . . .	46·6	44·4	50·00
Congestion . . . . .	20·00	22·2	16·6
Hæmorrhage . . . . .	—	—	—





	Both Sexes.	Males.	Females.
17. CRURA—			
Foci of softening . . . . .	3·3	5·5	—
Tumours . . . . .	—	—	—
Oedema . . . . .	36·6	38·8	33·3
18. OPTIC THALAMI—			
Normal . . . . .	83·3	88·8	75·00
Hæmorrhage . . . . .	3·3	5·5	—
Foci of softening . . . . .	13·3	5·5	25·00
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	93·3	88·8	C
Atrophy . . . . .	6·6	11·1	—
20. PITUITARY BODY—			
Size, increased . . . . .	3·3	5·5	—
„ normal . . . . .	86·6	88·8	83·3
„ diminished . . . . .	10·00	5·5	16·6
Structure, normal . . . . .	90·00	94·4	83·3
„ softened . . . . .	10·00	5·5	16·6
21. CEREBELLUM—			
Membranes, congested . . . . .	30·00	38·8	16·6
„ normal . . . . .	63·3	55·5	75·00
„ anæmic . . . . .	6·6	5·5	8·3
„ adherent . . . . .	13·3	16·6	8·3
„ non-adherent . . . . .	86·6	83·3	91·6
Hemispheres, equal . . . . .	93·3	C	83·3
„ unequal . . . . .	6·6	—	16·6
Lobes, symmetrical . . . . .	93·3	C	83·3
„ asymmetrical . . . . .	6·6	—	16·6
Cortex, normal . . . . .	73·3	77·7	66·6
„ atrophied . . . . .	26·6	22·2	33·3
Hæmorrhages . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	13·3	16·6	8·3
Pus . . . . .	3·3	—	8·3
Oedema . . . . .	36·6	38·8	33·3
Tumours . . . . .	3·3	5·5	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	50·00	61·1	33·3
„ „ atheromatous . . . . .	50·00	38·8	66·6
„ „ aneurysmal dilatation . . . . .	3·3	—	8·3
Membranes, normal . . . . .	80·00	83·3	75·00
„ congested . . . . .	20·00	16·6	25·00
„ anæmic . . . . .	—	—	—
Atrophy, general . . . . .	3·3	5·5	—
„ unilateral . . . . .	3·3	—	8·3
Congestion . . . . .	23·3	22·2	25·00
Foci of softening . . . . .	13·3	11·1	16·6
Punctiform hæmorrhages . . . . .	3·3	5·5	—
Tumours . . . . .	—	—	—
Pus . . . . .	3·3	—	8·3
Softened floor to fourth ventricle . . . . .	3·3	—	8·3
Granular ependyma . . . . .	10·00	11·1	8·3
23. SPINAL CORD—			
Membranes, congested . . . . .	3·3	5·5	—
„ normal . . . . .	6·6	5·5	8·3
„ anæmic . . . . .	—	—	—
Pus . . . . .	3·3	—	8·3
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	3·3	5·5	—
Congestion . . . . .	—	—	—
Substance, softening . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Substance, sclerosis . . . . .	3·3	5·5	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	3·3	5·5	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1384·5	1406·5	1302·5
„ right hemisphere . . . . .	569	585	504
„ left hemisphere . . . . .	531	543	489
„ cerebellum . . . . .	142	144	132·5
„ ponto-bulb . . . . .	25	26	22
„ skull-cap . . . . .	388	402	362·5
„ fluid (in ounces) . . . . .	5iv.	5v.	5iv.
Body, heart (in grammes) . . . . .	338	359	297·5
„ right lung . . . . .	523·5	585	524·5
„ left lung . . . . .	526	592	410·5
„ liver . . . . .	1314·5	1314	1199·5
„ spleen . . . . .	150	168	126
„ right kidney . . . . .	126	127·5	122
„ left kidney . . . . .	130	132	134
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	—	—
„ left adrenal . . . . .	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	28	33	20
Concave . . . . .	25·5	33	10







V.—SENILE DEMENTIA.

# SENILE DEMENTIA.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	10·3	12·65	6·53
Average age at death . . . . .	74 yrs. 6 m.	75 yrs.	75 yrs. 6 m.
1. SCALP—			
Lesions . . . . .	—	—	—
New growths . . . . .	—	—	—
2. SKULL CAP—			
Size, large . . . . .	9·75	9·67	10
,, average . . . . .	85·36	87·11	80
,, small . . . . .	4·87	3·22	10
Thickness, increased . . . . .	39·02	35·48	50
,, average . . . . .	31·72	38·7	10
,, diminished . . . . .	29·26	25·81	40
Density, increased . . . . .	51·22	51·62	50
,, average . . . . .	26·83	25·81	30
,, diminished . . . . .	21·95	22·58	20
Shape, dolico-cephalic . . . . .	19·51	19·35	20
,, meso-cephalic . . . . .	80·49	80·64	80
,, brachio-cephalic . . . . .	—	—	—
Symmetrical . . . . .	41·47	35·48	60
Asymmetrical . . . . .	58·52	64·51	40
Vascularity, congested . . . . .	31·72	29·03	40
,, average . . . . .	51·22	54·84	40
,, anæmic . . . . .	17·07	16·13	20
Vascular channels, number, increased . . . . .	21·95	16·13	40
,, ,, ,, average . . . . .	60·97	64·51	50
,, ,, ,, diminished . . . . .	17·07	19·35	10
,, ,, depth, increased . . . . .	21·95	16·13	40
,, ,, ,, average . . . . .	56·09	58·06	50
,, ,, ,, diminished . . . . .	21·95	25·81	10
Ossification, deficient . . . . .	—	—	—
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
3. SKULL BASE—			
Fossæ, symmetrical . . . . .	85·36	80·64	C
,, asymmetrical . . . . .	14·63	19·35	—
Pituitary fossa, deep . . . . .	14·63	16·13	10
,, ,, average . . . . .	58·52	54·84	70
,, ,, shallow . . . . .	26·83	29·03	20
Clivus, steep . . . . .	17·07	16·13	20
,, average . . . . .	53·65	51·62	60
,, shelving . . . . .	29·26	32·25	20
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	70·72	70·96	70





	Both Sexes.	Males.	Females.
4. BASAL VESSELS—			
Abnormal size . . . . .	29·26	29·03	30
„ arrangement . . . . .	4·87	3·22	10
Atheroma, commencing . . . . .	14·63	12·9	20
„ moderate . . . . .	34·15	32·25	40
„ very marked . . . . .	19·51	45·16	40
Aneurysmal dilatation . . . . .	4·87	6·45	—
Congestion . . . . .	—	—	—
5. CHOROID PLEXUSES —			
Normal . . . . .	65·86	64·51	70
Cystic degeneration . . . . .	29·26	32·25	20
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	2·43	3·22	—
Congestion . . . . .	4·87	—	20
6. DURA MATER—			
Thickness, normal . . . . .	31·72	29·03	40
„ increased . . . . .	68·28	70·96	60
Vascularity, congested . . . . .	26·83	29·03	20
„ normal . . . . .	63·42	61·28	70
„ anæmic . . . . .	9·75	9·67	10
Adhesion to cap, slight . . . . .	4·87	6·45	—
„ „ marked . . . . .	60·97	64·51	50
„ „ absent . . . . .	34·15	29·03	50
Pacchionian tubes, normal . . . . .	97·57	C	90
„ „ abnormal . . . . .	2·43	—	10
Rusty on inner surface . . . . .	9·75	9·67	10
Extravasation of blood between cap and dura . . . . .	4·87	3·22	10
Ossification . . . . .	—	—	—
Tumours . . . . .	—	—	—
7. SINUSES —			
Normal size and arrangement . . . . .	80·49	74·18	C
Abnormal size . . . . .	17·07	22·58	—
„ arrangement . . . . .	2·43	3·22	—
Thrombosis . . . . .	26·83	32·25	20
Rupture . . . . .	—	—	—
8. PIA-ARACHNOID—			
Thickness, normal . . . . .	24·39	12·9	60
„ moderately increased . . . . .	56·09	64·51	30
„ excessively increased . . . . .	19·51	22·58	10
Opacity, universal . . . . .	12·19	12·9	10
„ moderate . . . . .	70·72	67·74	80
„ absent . . . . .	17·07	19·35	10
Vascularity, congested . . . . .	39·02	38·7	40
„ average . . . . .	56·09	58·06	50
„ anæmic . . . . .	4·87	3·22	10
Adhesions (a) to dura, slight . . . . .	12·19	12·9	10
„ „ marked . . . . .	41·47	41·93	40
„ „ absent . . . . .	46·33	45·16	50
„ (b) to cortex, slight . . . . .	4·87	6·45	—
„ „ marked . . . . .	12·19	16·13	—
„ „ universal . . . . .	2·43	—	10
„ „ absent . . . . .	80·49	77·41	90
Arachnoid cysts . . . . .	7·31	6·45	10
Excess of fluid . . . . .	85·36	87·1	80
Semi-gelatinous fluid . . . . .	—	—	—
Pus . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
9. CEREBRUM—			
Hemispheres, equal . . . . .	78·04	77·41	80
„ „ unequal . . . . .	21·95	22·58	20
Lobes, symmetrical . . . . .	85·36	83·86	90
„ „ asymmetrical . . . . .	14·63	16·13	10



	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	9·75	9·67	10
„ „ normal . . . . .	87·81	87·1	90
„ „ complex . . . . .	2·43	3·22	—
„ nutrition, normal . . . . .	12·19	12·9	10
„ „ wasted . . . . .	87·81	87·1	90
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	14·63	12·9	20
„ atrophied . . . . .	85·36	87·1	80
Vascularity, congested . . . . .	14·63	12·9	20
„ average . . . . .	60·97	61·28	60
„ anæmic . . . . .	24·39	25·81	20
Foci of softening . . . . .	17·07	16·13	20
Oedema . . . . .	65·86	70·96	50
Effusion of blood . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Oedema . . . . .	65·86	70·96	50
Foci of softening . . . . .	17·07	16·13	20
Effusion of blood . . . . .	—	—	—
Pus . . . . .	—	—	—
Vascular channels, average . . . . .	36·58	35·48	40
„ „ dilated . . . . .	31·71	29·03	40
„ „ anæmic . . . . .	31·71	35·48	20
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	7·31	9·67	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	60·97	58·06	70
„ excessive . . . . .	17·07	19·35	10
Excess of fluid . . . . .	73·16	74·18	70
Granular ependyma . . . . .	14·63	19·35	—
Hæmorrhage into ventricles . . . . .	—	—	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	2·43	3·22	—
15. MESENCEPHALON—			
Iter, normal . . . . .	17·07	12·9	30
„ dilated . . . . .	82·93	87·1	70
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	2·43	3·22	—
Normal . . . . .	39·02	32·25	60
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Oedema . . . . .	60·97	67·74	40
17. CRURA—			
Normal . . . . .	39·02	32·25	60
Congestion . . . . .	2·43	3·22	—
Hæmorrhage . . . . .	—	—	—





	Both Sexes.	Males.	Females.
17. CRURA—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Edema . . . . .	60·97	67·74	40
18. OPTIC THALAMI—			
Normal . . . . .	97·57	96·77	C
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	2·43	3·22	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	C	C	C
Atrophy . . . . .	—	—	—
20. PITUITARY BODY—			
Size, increased . . . . .	4·87	3·22	10
„ normal . . . . .	85·36	90·33	70
„ diminished . . . . .	9·75	6·45	20
Structure, normal . . . . .	78·04	80·64	70
„ softened . . . . .	21·95	19·35	30
21. CEREBELLUM—			
Membranes, congested . . . . .	21·95	19·35	30
„ normal . . . . .	75·62	80·64	60
„ anæmic . . . . .	2·43	—	10
„ adherent . . . . .	7·31	9·67	—
„ non-adherent . . . . .	92·69	90·33	C
Hemispheres, equal . . . . .	C	C	C
„ unequal . . . . .	—	—	—
Lobes, symmetrical . . . . .	C	C	C
„ asymmetrical . . . . .	—	—	—
Cortex, normal . . . . .	65·86	64·51	70
„ atrophied . . . . .	34·14	35·48	30
Hæmorrhages . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	2·43	3·22	—
Pus . . . . .	—	—	—
Edema . . . . .	48·78	51·62	40
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	24·39	22·58	30
„ „ atheromatous . . . . .	75·61	77·41	70
„ „ aneurysmal dilatation . . . . .	9·75	9·67	10
Membranes, normal . . . . .	75·61	77·41	70
„ congested . . . . .	19·51	19·35	20
„ anæmic . . . . .	4·87	3·22	10
Atrophy, general . . . . .	—	—	—
„ unilateral . . . . .	—	—	—
Congestion . . . . .	17·07	16·13	20
Foci of softening . . . . .	—	—	—
Hæmorrhages . . . . .	—	—	—
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	2·43	3·22	—
Granular ependyma . . . . .	12·19	16·13	—
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
„ normal . . . . .	—	—	—
„ anæmic . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	—	—	—
Substance, softening . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1280·5	1327	1135
„ right hemisphere . . . . .	545	567	482·5
„ left hemisphere . . . . .	542·5	562	489·5
„ cerebellum . . . . .	143	148	130
„ ponto-bulb . . . . .	27	28·5	25
„ skull-cap . . . . .	394·5	409	357
„ fluid (in ounces) . . . . .	5v.	5v.ss.	5iv.ss.
Body, heart (in grammes). . . . .	338	360·5	282·5
„ right lung . . . . .	593	666	437
„ left lung . . . . .	615	664	501
„ liver . . . . .	1202	1253·5	1071
„ spleen . . . . .	147	171	118
„ right kidney . . . . .	130	139·5	103·5
„ left kidney . . . . .	125	132	111
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	8	—
„ left adrenal . . . . .	—	18	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	23	27	11
Concave . . . . .	22	25·5	12·5







VI.—EPILEPTIC INSANITY.

# EPILEPTIC INSANITY.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	12·06	11·07	13·73
Average age at death . . . . .	38 ys.	38 ys. 6 m.	36 ys.
1. SCALP—			
Lesions . . . . .	17·7	22·2	11·1
New growths . . . . .	—	—	—
2. SKULL CAP—			
Size, large . . . . .	2·2	3·7	—
„ average . . . . .	73·3	74·06	72·2
„ small . . . . .	24·4	22·2	27·7
Thickness, increased . . . . .	55·5	55·5	55·5
„ average . . . . .	31·1	33·3	27·7
„ diminished . . . . .	13·3	11·1	16·6
Density, increased . . . . .	55·5	55·5	55·5
„ average . . . . .	22·2	18·51	27·7
„ diminished . . . . .	22·2	25·93	16·6
Shape, dolico-cephalic . . . . .	13·3	14·81	11·1
„ meso-cephalic . . . . .	82·2	81·46	83·3
„ brachio-cephalic . . . . .	4·4	3·7	5·5
Symmetrical . . . . .	42·2	40·73	44·4
Asymmetrical . . . . .	57·7	59·25	55·5
Vascularity, congested . . . . .	37·7	37·03	38·8
„ average . . . . .	53·3	55·5	50·00
„ anæmic . . . . .	8·8	7·40	11·1
Vascular channels, number increased . . . . .	20·00	18·51	22·2
„ „ „ average . . . . .	66·6	62·97	72·2
„ „ „ diminished . . . . .	13·3	18·51	5·5
„ „ „ depth increased . . . . .	20·00	18·51	22·2
„ „ „ average . . . . .	62·2	59·25	66·6
„ „ „ diminished . . . . .	17·7	22·2	11·1
Ossification, deficient . . . . .	6·6	3·7	11·1
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
3. SKULL BASE—			
Fossæ, symmetrical . . . . .	80·00	88·8	66·6
„ asymmetrical . . . . .	20·00	11·1	33·3
Pituitary fossa, deep . . . . .	11·1	11·1	11·1
„ „ average . . . . .	68·8	70·36	66·6
„ „ „ shallow . . . . .	20·00	18·51	22·2
Clivus, steep . . . . .	26·6	29·62	22·2
„ average . . . . .	62·2	59·25	66·6
„ shelving . . . . .	11·1	11·1	11·1
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	82·2	77·7	88·8





	Both Sexes.	Males.	Females.
4. BASAL VESSELS—			
Abnormal size . . . . .	17·7	22·2	11·1
„ arrangement . . . . .	—	—	—
Atheroma, commencing . . . . .	17·7	18·51	16·6
„ moderate . . . . .	11·1	11·1	11·1
„ very marked . . . . .	—	—	—
Aneurysmal dilatation . . . . .	—	—	—
Congestion . . . . .	4·4	7·4	—
5. CHOROID PLEXUSES—			
Normal . . . . .	75·5	74·06	77·7
Cystic degeneration . . . . .	6·6	7·4	5·5
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	—	—	—
Congestion . . . . .	20·00	22·2	16·6
6. DURA MATER—			
Thickness, normal . . . . .	66·6	55·5	83·3
„ increased . . . . .	33·3	44·4	16·6
Vascularity, congested . . . . .	40·00	40·73	38·8
„ normal . . . . .	51·1	51·85	50·00
„ anæmic . . . . .	8·8	7·4	11·1
Adhesion to cap, slight . . . . .	8·8	7·4	11·1
„ „ marked . . . . .	24·4	37·03	5·5
„ „ absent . . . . .	66·6	55·5	83·3
Pacchionian bodies, normal . . . . .	95·5	92·58	C
„ „ abnormal . . . . .	4·4	7·4	—
Rusty on inner surface . . . . .	2·2	—	5·5
Extravasation of blood between cap, etc. . . . .	4·4	7·4	—
Ossification . . . . .	—	—	—
Tumours . . . . .	—	—	—
7. SINUSES—			
Normal size and arrangement . . . . .	84·4	85·17	83·3
Abnormal size . . . . .	15·5	14·81	16·6
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	26·6	25·93	27·7
Rupture . . . . .	2·2	3·7	—
8. PIA-ARACHNOID—			
Thickness, normal . . . . .	42·2	37·03	50·00
„ moderately increased . . . . .	46·6	48·15	44·4
„ excessively increased . . . . .	11·1	14·81	5·5
Opacity, universal . . . . .	2·2	3·7	—
„ moderate . . . . .	42·2	48·15	33·3
„ absent . . . . .	55·5	48·15	66·6
Vascularity, congested . . . . .	62·2	66·6	55·5
„ average . . . . .	31·1	29·62	33·3
„ anæmic . . . . .	6·6	3·7	11·1
Adhesions (a) to dura, slight . . . . .	28·8	29·62	27·7
„ „ marked . . . . .	8·8	14·81	—
„ „ absent . . . . .	62·2	55·5	72·2
„ (b) to cortex, slight . . . . .	13·3	14·81	11·1
„ „ marked . . . . .	8·8	14·81	—
„ „ universal . . . . .	11·1	11·1	11·1
„ „ absent . . . . .	66·6	59·25	77·7
Arachnoid cysts . . . . .	—	—	—
Excess of fluid . . . . .	17·7	22·2	11·1
Semi-gelatinous fluid . . . . .	—	—	—
Pus . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
9. CEREBRUM—			
Hemispheres, equal . . . . .	66·6	70·36	61·1
„ unequal . . . . .	33·3	29·62	38·8
Lobes, symmetrical . . . . .	75·5	81·46	66·6
„ asymmetrical . . . . .	24·4	18·51	33·3

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	31·1	33·3	27·7
„ „ normal . . . . .	68·8	66·6	72·2
„ „ complex . . . . .	—	—	—
„ —nutrition, normal . . . . .	55·5	44·4	72·2
„ „ wasted . . . . .	44·4	55·5	27·7
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	51·1	40·73	66·6
„ atrophied . . . . .	48·8	59·25	33·3
Vascularity, congested . . . . .	46·6	40·73	55·5
„ average . . . . .	37·7	40·73	33·3
„ anæmic . . . . .	15·5	18·51	11·1
Foci of softening . . . . .	4·4	3·7	5·5
Œdema . . . . .	13·3	14·81	11·1
Effusion of blood . . . . .	—	—	—
Tumours . . . . .	2·2	3·7	—
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	11·36	7·69	16·6
Œdema . . . . .	15·91	15·38	16·6
Foci of softening . . . . .	6·81	3·84	11·1
Effusion of blood . . . . .	2·27	3·84	—
Pus . . . . .	2·27	—	5·5
Vascular channels, average . . . . .	31·82	23·08	44·4
„ „ dilated . . . . .	54·54	61·53	44·4
„ „ anæmic . . . . .	13·64	15·38	11·1
Punctiform hæmorrhages . . . . .	9·09	11·54	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	2·27	3·84	—
Foci of softening . . . . .	2·27	3·84	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	27·28	34·62	16·6
„ excessive . . . . .	2·27	3·84	—
Excess of fluid . . . . .	18·18	23·08	11·1
Granular ependyma . . . . .	9·09	15·38	—
Hæmorrhage into ventricles . . . . .	2·27	3·84	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	—	—	—
15. MESENCEPHALON—			
Iter, normal . . . . .	75·00	65·37	88·8
„ dilated . . . . .	25·00	34·62	11·1
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	18·18	19·23	16·6
Normal . . . . .	75·00	73·08	77·7
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Œdema . . . . .	9·09	11·54	5·5
17. CRURA—			
Normal . . . . .	75·00	76·92	72·2
Congestion . . . . .	18·18	15·38	22·2







	Both Sexes.	Males.	Females.
17. CRURA—			
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Edema . . . . .	9·09	11·54	5·5
18. OPTIC THALAMI—			
Normal . . . . .	97·72	96·15	C
Hæmorrhage . . . . .	2·27	3·84	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	C	C	C
Atrophy . . . . .	—	—	—
20. PITUITARY BODY—			
Size, increased . . . . .	—	—	—
,, normal . . . . .	95·46	96·15	94·4
,, diminished . . . . .	4·54	3·84	5·5
Structure, normal . . . . .	93·19	C	82·2
,, softened . . . . .	6·81	—	16·6
21. CEREBELLUM—			
Membranes, congested . . . . .	44·4	44·4	44·4
,, normal . . . . .	48·8	48·15	50·00
,, anæmic . . . . .	6·6	7·4	5·5
,, adherent . . . . .	8·8	7·4	11·1
,, non-adherent . . . . .	91·1	92·58	88·8
Hemispheres, equal . . . . .	95·5	96·29	94·4
,, unequal . . . . .	4·4	3·7	5·5
Lobes, symmetrical . . . . .	95·5	96·29	94·4
,, asymmetrical . . . . .	4·4	3·7	5·5
Cortex, normal . . . . .	82·2	81·46	82·2
,, atrophied . . . . .	17·7	18·51	16·6
Hæmorrhages . . . . .	2·2	3·7	—
Punctiform hæmorrhages . . . . .	2·2	3·7	—
Foci of softening . . . . .	—	—	—
Pus . . . . .	—	—	—
Edema . . . . .	13·3	14·81	11·1
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	82·2	81·46	82·2
,, ,, atheromatous . . . . .	17·7	18·51	16·6
,, ,, aneurysmal dilatation . . . . .	—	—	—
Membranes, normal . . . . .	64·4	62·97	66·6
,, congested . . . . .	31·1	29·62	33·3
,, anæmic . . . . .	4·4	7·4	—
Atrophy, general . . . . .	—	—	—
,, unilateral . . . . .	4·4	7·4	—
Congestion . . . . .	24·4	25·93	22·2
Foci of softening . . . . .	2·2	3·7	—
Hæmorrhages . . . . .	2·2	3·7	—
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	—	—	—
Granular ependyma . . . . .	6·6	11·1	—
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
,, normal . . . . .	—	—	—
,, anæmic . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Substance, softening . . . . .	—	—	—
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1283	1310	1257
„ right hemisphere . . . . .	569	576	522
„ left hemisphere . . . . .	561	566	519
„ cerebellum . . . . .	137	138	133
„ ponto-bulb . . . . .	26	26	26
„ skull-cap . . . . .	386·5	404	362
„ fluid (in ounces) . . . . .	3ii.	3iii.	3ii.
Body, heart (in grammes) . . . . .	275	295	220·5
„ right lung . . . . .	654	735	521
„ left lung . . . . .	561	658	383·5
„ liver . . . . .	1330	1362	1188
„ spleen . . . . .	169	184	113·5
„ right kidney . . . . .	121	126	103
„ left kidney . . . . .	136	139	122
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	—	—
„ left adrenal . . . . .	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	37	42	27·5
Concave . . . . .	30	37·5	23

## VII.—ACUTE MANIA AND MELANCHOLIA.

# ACUTE MANIA AND MELANCHOLIA.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	8·79	8·57	9·15
Average age at death . . . . .	46 yrs.	47 yrs.	45 yrs.
1. SCALP—			
Lesions . . . . .	2·85	4·76	—
New growths . . . . .	2·85	—	7·14
2. SKULL CAP—			
Size, large . . . . .	2·85	4·76	—
„ average . . . . .	91·44	90·48	92·84
„ small . . . . .	5·71	4·76	7·14
Thickness, increased . . . . .	25·71	19·05	35·71
„ average . . . . .	48·57	57·14	35·71
„ diminished . . . . .	25·71	23·81	28·57
Density, increased . . . . .	42·85	42·85	42·85
„ average . . . . .	37·14	38·1	35·71
„ diminished. . . . .	20·00	19·05	21·42
Shape, dolico-cephalic . . . . .	—	—	—
„ meso-cephalic . . . . .	88·56	90·48	85·7
„ brachio-cephalic . . . . .	11·43	9·52	14·28
Symmetrical . . . . .	54·28	66·6	35·71
Asymmetrical . . . . .	45·72	33·3	64·28
Vascularity, congested . . . . .	22·86	19·05	28·57
„ average . . . . .	65·72	71·42	57·14
„ anæmic . . . . .	11·43	9·52	14·28
Vascular channels, number, increased . . . . .	22·86	14·28	35·71
„ „ „ average . . . . .	54·28	66·6	35·71
„ „ „ diminished . . . . .	22·86	19·05	28·57
„ „ „ depth, increased . . . . .	20·00	9·52	35·71
„ „ „ average . . . . .	57·14	66·6	42·85
„ „ „ diminished . . . . .	22·86	23·81	21·42
Ossification, deficient . . . . .	5·71	9·52	—
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	2·85	—	7·14
3. SKULL BASE—			
Fossæ, symmetrical . . . . .	85·7	85·71	85·7
„ asymmetrical . . . . .	14·3	14·28	14·28
Pituitary fossa, deep . . . . .	11·43	19·05	—
„ „ average . . . . .	57·14	57·14	57·14
„ „ „ shallow . . . . .	31·43	23·81	42·85
Clivus, steep . . . . .	22·86	14·28	35·71
„ average . . . . .	57·14	57·14	57·14
„ shelving . . . . .	20·00	28·57	7·14
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	85·7	76·19	C





	Both Sexes.	Males.	Females.
<b>4. BASAL VESSELS—</b>			
Abnormal size . . . . .	14·3	23·81	—
„ arrangement . . . . .	2·85	4·76	—
Atheroma, commencing . . . . .	14·3	19·05	7·14
„ moderate . . . . .	34·29	42·85	21·42
„ very marked . . . . .	8·57	4·76	14·28
Aneurysmal dilatation . . . . .	2·85	—	7·14
Congestion . . . . .	8·57	14·28	—
<b>5. CHOROID PLEXUSES—</b>			
Normal . . . . .	71·42	76·19	64·28
Cystic degeneration . . . . .	5·71	—	14·28
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	2·85	4·76	—
Congestion . . . . .	20·00	19·05	21·42
<b>6. DURA MATER—</b>			
Thickness, normal . . . . .	71·42	66·6	78·56
„ increased . . . . .	28·57	33·3	21·42
Vascularity, congested . . . . .	40·00	38·1	42·85
„ normal . . . . .	57·14	57·14	57·14
„ anemic . . . . .	2·85	4·76	—
Adhesion to cap, slight . . . . .	11·43	14·28	7·14
„ „ marked . . . . .	25·71	23·81	28·57
„ „ absent . . . . .	62·86	61·9	64·28
Pacchionian bodies, normal . . . . .	C	C	C
„ „ abnormal . . . . .	—	—	—
Rusty on inner surface . . . . .	2·85	4·76	—
Extravasation of blood between cap and dura	8·57	14·28	—
Ossification . . . . .	—	—	—
Tumours . . . . .	2·85	4·76	—
<b>7. SINUSES—</b>			
Normal size and arrangement . . . . .	94·28	95·24	92·84
Abnormal size . . . . .	2·85	4·76	—
„ arrangement . . . . .	2·85	—	7·14
Thrombosis . . . . .	11·43	14·28	7·14
Rupture . . . . .	—	—	—
<b>8. PIA-ARACHNOID—</b>			
Thickness, normal . . . . .	34·29	19·05	57·14
„ moderately increased . . . . .	48·57	52·38	42·85
„ excessively increased . . . . .	17·14	28·56	—
Opacity, universal . . . . .	8·57	14·28	—
„ moderate . . . . .	37·14	47·62	21·42
„ absent . . . . .	54·28	38·1	78·56
Vascularity, congested . . . . .	45·72	47·62	42·85
„ average . . . . .	51·42	47·62	57·14
„ anemic . . . . .	2·85	4·76	—
Adhesions (a) to dura, slight . . . . .	14·3	19·05	7·14
„ „ marked . . . . .	14·3	14·28	14·28
„ „ absent . . . . .	71·4	66·6	78·56
„ (b) to cortex, slight . . . . .	14·3	14·28	14·28
„ „ marked . . . . .	11·43	9·52	14·28
„ „ universal . . . . .	—	—	—
„ „ absent . . . . .	74·27	76·19	71·42
Arachnoid cysts . . . . .	5·71	9·52	—
Excess of fluid . . . . .	40·00	52·38	21·42
Semi-gelatinous fluid . . . . .	2·85	4·76	—
Pus . . . . .	—	—	—
Tumours . . . . .	2·85	—	7·14
Tuberculosis . . . . .	—	—	—
<b>9. CEREBRUM—</b>			
Hemispheres, equal . . . . .	91·43	95·24	85·7
„ unequal . . . . .	8·57	4·76	14·28
Lobes, symmetrical . . . . .	91·43	90·48	92·84
„ asymmetrical . . . . .	8·57	9·52	7·14

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convulsions type—simple . . . . .	11·43	9·52	14·28
„ „ normal . . . . .	88·56	90·48	85·7
„ „ complex . . . . .	—	—	—
„ nutrition, normal . . . . .	57·14	47·62	71·42
„ „ wasted . . . . .	42·85	52·38	28·57
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	45·72	38·1	57·14
„ atrophied . . . . .	54·28	61·9	42·85
Vascularity, congested . . . . .	25·71	28·57	21·42
„ average . . . . .	60·00	57·14	64·28
„ anæmic . . . . .	14·3	14·28	14·28
Foci of softening . . . . .	—	—	—
Œdema . . . . .	17·14	23·81	7·14
Effusion of blood . . . . .	—	—	—
Tumours . . . . .	5·71	4·76	7·14
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Œdema . . . . .	17·14	23·81	7·14
Foci of softening . . . . .	—	—	—
Effusion of blood . . . . .	—	—	—
Pus . . . . .	—	—	—
Vascular channels, average . . . . .	48·57	52·38	42·85
„ „ dilated . . . . .	37·14	33·3	42·85
„ „ anæmic . . . . .	14·3	14·28	14·28
Punctiform hæmorrhages . . . . .	2·85	4·76	—
Tumours . . . . .	2·85	—	7·14
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Punctiform hæmorrhages . . . . .	2·85	4·76	—
Foci of softening . . . . .	2·85	—	7·14
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	28·57	33·3	21·42
„ excessive . . . . .	2·85	—	7·14
Excess of fluid . . . . .	17·14	28·56	—
Granular ependyma . . . . .	8·57	9·52	7·14
Hæmorrhage into ventricles . . . . .	—	—	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	2·85	—	7·14
15. MESENCEPHALON—			
Iter, normal . . . . .	79·42	66·6	C
„ dilated . . . . .	20·58	33·3	—
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	2·94	4·76	—
Normal . . . . .	91·18	90·48	92·3
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Œdema . . . . .	8·82	9·52	7·69
17. CRURA—			
Normal . . . . .	88·22	90·48	84·6
Congestion . . . . .	5·88	4·76	7·69







	Both Sexes.	Males.	Females.
17. CRURA—			
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Edema . . . . .	8·82	9·52	7·69
18. OPTIC THALAMI—			
Normal . . . . .	C	C	C
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	97·05	C	92·3
Atrophy . . . . .	2·94	—	7·69
20. PITUITARY BODY—			
Size, increased . . . . .	5·88	9·52	—
„ normal . . . . .	76·47	71·42	84·6
„ diminished . . . . .	17·64	19·05	15·38
Structure, normal . . . . .	85·28	85·71	84·6
„ softened . . . . .	14·71	14·28	15·38
21. CEREBELLUM—			
Membranes, congested . . . . .	32·35	23·81	46·15
„ normal . . . . .	64·7	71·42	53·84
„ anæmic . . . . .	2·94	4·76	—
„ adherent . . . . .	8·82	—	23·08
„ non-adherent . . . . .	91·18	C	76·97
Hemispheres, equal . . . . .	97·05	95·24	C
„ unequal . . . . .	2·94	4·76	—
Lobes, symmetrical . . . . .	97·05	95·24	C
„ asymmetrical . . . . .	2·94	4·76	—
Cortex, normal . . . . .	94·11	90·48	C
„ atrophied . . . . .	5·88	9·52	—
Hæmorrhages . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Pus . . . . .	—	—	—
Edema . . . . .	8·82	9·52	7·69
Tumours . . . . .	5·88	9·52	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	76·47	71·42	84·6
„ „ atheromatous . . . . .	23·52	28·57	15·38
„ „ aneurysmal dilatation . . . . .	—	—	—
Membranes, normal . . . . .	64·7	61·9	69·22
„ congested . . . . .	32·35	33·3	30·77
„ anæmic . . . . .	2·94	4·76	—
Atrophy, general . . . . .	—	—	—
„ unilateral . . . . .	2·94	4·76	—
Congestion . . . . .	25·71	28·57	23·08
Foci of softening . . . . .	—	—	—
Hæmorrhages . . . . .	—	—	—
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	—	—	—
Granular ependyma . . . . .	11·43	9·52	15·38
23. SPINAL CORD —			
Membranes, congested . . . . .	2·94	4·76	—
„ normal . . . . .	—	—	—
„ anæmic . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	2·94	4·76	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Substance, softening . . . . .	—	—	—
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1326	1355·5	1298
„ right hemisphere . . . . .	574·5	589·5	554·5
„ left hemisphere . . . . .	572·5	586·5	552
„ cerebellum . . . . .	145·5	149	142
„ ponto-bulb . . . . .	25·5	26·5	23
„ skull-cap . . . . .	369·5	384	344
„ fluid (in ounces) . . . . .	3ii.ss.	3iii.	3ii.
Body, heart (in grammes) . . . . .	298·5	318	288
„ right lung . . . . .	671·5	788·5	545
„ left lung . . . . .	572	650·5	460
„ liver . . . . .	1445	1461	1432
„ spleen . . . . .	138·5	131	151·5
„ right kidney . . . . .	138	149·5	121
„ left kidney . . . . .	142	150	131
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	—	—
„ left adrenal . . . . .	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	24	36	10·5
Concave . . . . .	25	36	17





VIII.—CHRONIC MANIA AND MELANCHOLIA.

## CHRONIC MANIA AND MELANCHOLIA.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	10·55	6·12	17·65
Average age at death . . . . .	50 ys. 6 m.	49 ys.	51 ys.
1. SCALP—			
Lesions . . . . .	—	—	—
New growths . . . . .	—	—	—
2. SKULL CAP—			
Size, large . . . . .	—	—	—
" average . . . . .	80·48	86·6	76·92
" small . . . . .	19·51	13·3	23·07
Thickness, increased . . . . .	36·58	40·00	34·62
" average . . . . .	34·14	33·3	34·62
" diminished . . . . .	29·26	26·6	30·76
Density, increased . . . . .	46·34	53·3	42·3
" average . . . . .	36·58	40·00	34·62
" diminished . . . . .	17·07	6·6	23·07
Shape, dolico-cephalic . . . . .	7·31	6·6	7·69
" meso-cephalic . . . . .	87·8	86·6	88·46
" brachio-cephalic . . . . .	4·87	6·6	3·84
Symmetrical . . . . .	63·41	60·00	65·38
Asymmetrical . . . . .	36·58	40·00	34·62
Vascularity, congested . . . . .	17·07	—	26·92
" average . . . . .	73·16	80·00	69·24
" anemic . . . . .	9·75	20·00	3·84
Vascular channels, number, increased . . . . .	19·51	13·3	23·07
" " " average . . . . .	53·65	60·00	50·00
" " " diminished . . . . .	26·82	26·6	26·92
" " " depth, increased . . . . .	24·38	13·3	30·76
" " " average . . . . .	51·22	60·00	46·16
" " " diminished . . . . .	24·38	26·6	23·07
Ossification, deficient . . . . .	4·87	—	7·69
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
3. SKULL BASE—			
Fossæ, symmetrical . . . . .	92·68	93·3	92·31
" asymmetrical . . . . .	7·31	6·6	7·69
Pituitary fossa, deep . . . . .	4·87	13·3	—
" " average . . . . .	70·73	60·00	76·92
" " shallow . . . . .	24·38	26·6	23·07
Clivus, steep . . . . .	9·75	13·3	7·69
" average . . . . .	73·16	66·6	76·92
" shelving . . . . .	17·07	20·00	15·38
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	80·48	73·3	84·61



	Both Sexes.	Males.	Females.
<b>4. BASAL VESSELS—</b>			
Abnormal size . . . . .	19·51	26·6	15·38
„ arrangement . . . . .	—	—	—
Atheroma, commencing . . . . .	17·07	20·00	15·38
„ moderate . . . . .	19·51	13·3	23·07
„ very marked . . . . .	14·63	20·00	11·53
Aneurysmal dilatation . . . . .	4·87	6·6	3·84
Congestion . . . . .	—	—	—
<b>5. CHOROID PLEXUSES—</b>			
Normal . . . . .	73·16	66·6	76·92
Cystic degeneration . . . . .	24·38	33·3	19·23
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	—	—	—
Congestion . . . . .	4·87	—	7·69
<b>6. DURA MATER—</b>			
Thickness, normal . . . . .	68·41	60·00	65·38
„ increased . . . . .	36·58	40·00	34·62
Vascularity, congested . . . . .	19·51	26·6	15·38
„ normal . . . . .	70·72	53·3	80·76
„ anæmic . . . . .	9·75	20·00	3·84
Adhesion to cap, slight . . . . .	2·43	—	3·84
„ marked . . . . .	21·95	6·6	30·76
„ absent . . . . .	75·62	93·3	65·38
Pacchionian bodies, normal . . . . .	C	C	C
„ „ abnormal . . . . .	—	—	—
Rusty on inner surface . . . . .	2·43	—	3·84
Extravasation of blood between cap and dura	2·43	6·6	—
Ossification . . . . .	—	—	—
Tumours . . . . .	—	—	—
<b>7. SINUSES—</b>			
Normal size and arrangement . . . . .	85·35	73·3	92·31
Abnormal size . . . . .	14·63	26·6	7·69
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	34·14	53·3	23·07
Rupture . . . . .	—	—	—
<b>8. PIA-ARACHNOID—</b>			
Thickness, normal . . . . .	34·14	6·6	50·00
„ moderately increased . . . . .	56·09	73·3	46·16
„ excessively „ . . . . .	9·75	20·00	3·84
Opacity, universal . . . . .	4·87	6·6	3·84
„ moderate . . . . .	46·34	60·00	38·46
„ absent . . . . .	48·77	33·3	57·69
Vascularity, congested . . . . .	31·7	40·00	26·92
„ average . . . . .	63·41	53·3	69·24
„ anæmic . . . . .	4·87	6·6	3·84
Adhesions (a) to dura, slight . . . . .	9·75	6·6	11·53
„ „ marked . . . . .	12·19	20·00	7·69
„ „ absent . . . . .	78·04	73·3	80·76
„ (b) to cortex, slight . . . . .	—	—	—
„ „ marked . . . . .	—	—	—
„ „ universal . . . . .	2·43	6·6	—
„ „ absent . . . . .	97·55	93·3	C
Arachnoid cysts . . . . .	2·43	—	3·84
Excess of fluid . . . . .	51·22	66·6	42·3
Semi-gelatinous fluid . . . . .	7·31	13·3	3·84
Pus . . . . .	2·43	—	3·84
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
<b>9. CEREBRUM—</b>			
Hemispheres, equal . . . . .	95·12	93·3	96·16
„ unequal . . . . .	4·87	6·6	3·84
Lobes, symmetrical . . . . .	92·68	93·3	92·31
„ asymmetrical . . . . .	7·31	6·6	7·69

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	12·19	20·00	7·69
„ „ normal . . . . .	87·8	80·00	92·31
„ „ complex . . . . .	—	—	—
„ „ nutrition, normal . . . . .	53·65	46·6	57·69
„ „ „ wasted . . . . .	46·34	53·3	42·3
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	41·47	33·3	46·16
„ „ atrophied . . . . .	58·53	66·6	53·84
Vascularity, congested . . . . .	7·31	13·3	3·84
„ „ average . . . . .	65·86	53·3	73·08
„ „ anæmic . . . . .	26·82	33·3	23·07
Foci of softening . . . . .	—	—	—
Oedema . . . . .	17·07	26·6	11·53
Effusion of blood . . . . .	—	—	—
Tumours . . . . .	2·43	—	3·84
Tuberculosis . . . . .	—	—	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Oedema . . . . .	12·19	20·00	7·69
Foci of softening . . . . .	—	—	—
Effusion of blood . . . . .	—	—	—
Pus . . . . .	—	—	—
Vascular channels, average . . . . .	46·34	26·6	57·69
„ „ „ dilated . . . . .	36·58	53·3	26·92
„ „ „ anæmic . . . . .	17·07	20·00	15·38
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	2·43	6·6	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	36·58	46·6	30·76
„ „ excessive . . . . .	4·87	6·6	3·84
Excess of fluid . . . . .	31·7	40·00	26·92
Granular ependyma . . . . .	9·75	13·3	7·69
Hæmorrhage into ventricles . . . . .	—	—	—
Pus in ventricles . . . . .	—	—	—
Tumours . . . . .	—	—	—
15. MESENCEPHALON—			
Iter, normal . . . . .	63·41	53·3	69·24
„ „ „ dilated . . . . .	36·58	46·6	30·76
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	4·87	6·6	3·84
Normal . . . . .	82·94	66·6	92·31
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Oedema . . . . .	12·19	26·6	3·84
17. CRURA—			
Normal . . . . .	82·94	66·6	92·31
Congestion . . . . .	4·87	6·6	3·84
Hæmorrhage . . . . .	—	—	—





	Both Sexes.	Males.	Females.
17. CRURA—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Œdema . . . . .	12·19	26·6	3·84
18. OPTIC THALAMI—			
Normal . . . . .	C	C	C
Hæmorrhage . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	C	C	C
Atrophy . . . . .	—	—	—
20. PITUITARY BODY—			
Size, increased . . . . .	2·43	6·6	—
„ normal . . . . .	95·12	93·3	96·16
„ diminished . . . . .	2·43	—	3·84
Structure, normal . . . . .	92·68	86·6	96·16
„ softened . . . . .	7·31	13·3	3·84
21. CEREBELLUM—			
Membranes, congested . . . . .	17·07	20·00	15·38
„ normal . . . . .	80·48	80·00	80·76
„ anæmic . . . . .	2·43	—	3·84
„ adherent . . . . .	4·87	6·6	3·84
„ non-adherent . . . . .	95·12	93·3	96·16
Hemispheres, equal . . . . .	97·55	C	96·16
„ unequal . . . . .	2·43	—	3·84
Lobes, symmetrical . . . . .	97·55	C	96·16
„ asymmetrical . . . . .	2·43	—	3·84
Cortex, normal . . . . .	87·8	80·00	92·31
„ atrophied . . . . .	12·19	20·00	7·69
Hæmorrhages . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Pus . . . . .	—	—	—
Œdema . . . . .	7·31	20·00	—
Tumours . . . . .	2·43	—	3·84
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	60·97	40·00	73·08
„ „ atheromatous . . . . .	39·02	60·00	26·92
„ „ aneurysmal dilatation . . . . .	2·43	—	3·84
Membranes, normal . . . . .	85·35	73·3	92·31
„ congested . . . . .	14·63	26·6	7·69
„ anæmic . . . . .	—	—	—
Atrophy, general . . . . .	—	—	—
„ unilateral . . . . .	—	—	—
Congestion . . . . .	14·63	26·6	7·69
Foci of softening . . . . .	—	—	—
Hæmorrhages . . . . .	—	—	—
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	—	—	—
Granular ependyma . . . . .	9·75	20·00	3·84
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
„ normal . . . . .	—	—	—
„ anæmic . . . . .	—	—	—
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	—	—	—
Substance, softening . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes) —			
Brain, total . . . . .	1261	1555	1204
„ right hemisphere . . . . .	567	626	533·5
„ left hemisphere . . . . .	566	624·5	532·5
„ cerebellum . . . . .	144·5	153	139
„ ponto-bulb . . . . .	26·5	29	25·5
„ skull-cap . . . . .	370	389	347·5
„ fluid (in ounces) . . . . .	5iii.	5iii. ss.	5ii. ss.
Body, heart (in grammes) . . . . .	318·5	361·5	289
„ right lung . . . . .	692	863	598
„ left lung . . . . .	564·5	774·5	462
„ liver . . . . .	1387·5	1546·5	1304
„ spleen . . . . .	157	170	151
„ right kidney . . . . .	127	132·5	124·5
„ left kidney . . . . .	124	127	124·5
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	8	—	8
„ left adrenal . . . . .	8	—	8
26. BREAKING STRAIN OF RIBS—			
Convex . . . . .	26	37	19
Concave . . . . .	29	45	15·5







## IX.—IMBECILITY AND IDIOCY.

# IMBECILITY AND IDIOCY.

	Both Sexes.	Males.	Females.
Total P.M.'s in 3 years . . . . .	5·27	6·53	3·26
Average age at death . . . . .	29 years.	27 ys. 6 m.	39 years.
1. SCALP—			
Lesions . . . . .	—	—	—
New growths . . . . .	—	—	—
2. SKULL CAP—			
Size, large . . . . .	9·52	12·5	—
„ average . . . . .	57·14	68·75	20
„ small . . . . .	33·3	18·75	80
Thickness, increased . . . . .	42·85	43·75	40
„ average . . . . .	52·38	56·25	40
„ diminished . . . . .	4·76	—	20
Density, increased . . . . .	23·81	18·75	40
„ average . . . . .	38·1	43·75	20
„ diminished . . . . .	38·1	37·5	40
Shape, dolico-cephalic . . . . .	14·28	12·5	20
„ meso-cephalic . . . . .	47·62	50·00	40
„ brachio-cephalic . . . . .	38·1	37·5	40
Symmetrical . . . . .	42·85	50·00	20
Asymmetrical . . . . .	57·14	50·00	80
Vascularity, congested . . . . .	19·05	25·00	—
„ average . . . . .	66·6	62·5	80
„ anæmic . . . . .	14·28	12·5	20
Vascular channels, number, increased . . . . .	9·52	12·5	—
„ „ „ average . . . . .	61·9	62·5	60
„ „ „ diminished . . . . .	28·56	25·00	40
„ „ „ depth, increased . . . . .	9·52	12·5	—
„ „ „ average . . . . .	61·9	62·5	60
„ „ „ diminished . . . . .	28·56	25·00	40
Ossification, deficient . . . . .	9·52	6·25	20
Fractures, recent or remote . . . . .	—	—	—
New growths . . . . .	—	—	—
3. SKULL BASE—			
Fosse, symmetrical . . . . .	80·95	75·00	C
„ asymmetrical . . . . .	19·05	25·00	—
Pituitary fossa, deep . . . . .	14·28	12·5	20
„ „ average . . . . .	61·9	62·5	60
„ „ „ shallow . . . . .	23·81	25·00	20
Clivus, steep . . . . .	28·56	31·25	20
„ average . . . . .	52·38	50·00	60
„ shelving . . . . .	19·05	18·75	20
4. BASAL VESSELS—			
Normal size and arrangement . . . . .	66·6	62·5	80





	Both Sexes.	Males.	Females.
4. BASAL VESSELS—			
Abnormal size . . . . .	33·3	37·5	20
„ arrangement . . . . .	4·76	6·25	—
Atheroma, commencing . . . . .	19·05	18·75	20
„ moderate . . . . .	9·52	6·25	20
„ very marked . . . . .	—	—	—
Aneurysmal dilatation . . . . .	—	—	—
Congestion . . . . .	4·76	6·25	—
5. CHOROID PLEXUSES—			
Normal . . . . .	76·19	75·00	80
Cystic degeneration . . . . .	14·28	12·5	20
Tumours . . . . .	—	—	—
Earthy deposit . . . . .	—	—	—
Congestion . . . . .	14·28	18·75	—
6. DURA MATER—			
Thickness, normal . . . . .	80·95	87·5	60
„ increased . . . . .	19·05	12·5	40
Vascularity, congested . . . . .	19·05	25·00	—
„ normal . . . . .	71·42	68·75	80
„ anæmic . . . . .	9·52	6·25	20
Adhesion to cap, slight . . . . .	9·52	6·25	20
„ „ marked . . . . .	4·76	6·25	—
„ „ absent . . . . .	85·71	87·5	80
Pacchionian bodies, normal . . . . .	95·24	93·75	C
„ „ abnormal . . . . .	4·76	6·25	—
Rusty on inner surface . . . . .	—	—	—
Extravasation of blood between cap and dura . . . . .	—	—	—
Ossification . . . . .	—	—	—
Tumours . . . . .	—	—	—
7. SINUSES—			
Normal size and arrangement . . . . .	90·48	87·5	C
Abnormal size . . . . .	9·52	12·5	—
„ arrangement . . . . .	—	—	—
Thrombosis . . . . .	23·81	12·5	60
Rupture . . . . .	—	—	—
8. PIA-ARACHNOID—			
Thickness, normal . . . . .	47·62	50·00	40
„ moderately increased . . . . .	42·85	37·5	60
„ excessively increased . . . . .	9·52	12·5	—
Opacity, universal . . . . .	4·76	6·25	—
„ moderate . . . . .	23·81	25·00	20
„ absent . . . . .	71·42	68·75	80
Vascularity, congested . . . . .	42·85	56·25	—
„ average . . . . .	52·38	37·5	C
„ anæmic . . . . .	4·76	6·25	—
Adhesions (a) to dura, slight . . . . .	4·76	6·25	—
„ „ marked . . . . .	14·28	18·75	—
„ „ absent . . . . .	80·95	75·00	C
„ (b) to cortex, slight . . . . .	—	—	—
„ „ marked . . . . .	4·76	6·25	—
„ „ universal . . . . .	9·52	12·5	—
„ „ absent . . . . .	85·71	81·25	C
Arachnoid cysts . . . . .	4·76	6·25	—
Excess of fluid . . . . .	33·3	31·25	40
Semi-gelatinous fluid . . . . .	—	—	—
Pus . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
9. CEREBRUM—			
Hemispheres, equal . . . . .	80·95	87·5	60
„ unequal . . . . .	19·05	12·5	40
Lobes, symmetrical . . . . .	90·48	93·75	80
„ asymmetrical . . . . .	9·52	6·25	20

	Both Sexes.	Males.	Females.
9. CEREBRUM—			
Convolutions—type, simple . . . . .	57·14	62·5	40
"      "      normal . . . . .	42·85	37·5	60
"      "      complex . . . . .	—	—	—
"      nutrition, normal . . . . .	38·1	37·5	40
"      "      wasted . . . . .	61·9	62·5	60
10. GRAY SUBSTANCE—			
Thickness, normal . . . . .	40·00	40·00	40
"      atrophied . . . . .	60·00	60·00	60
Vascularity, congested . . . . .	40·00	53·3	—
"      average . . . . .	35·00	33·3	40
"      anæmic . . . . .	25·00	13·3	60
Foci of softening . . . . .	—	—	—
Œdema . . . . .	20·00	20·00	20
Effusion of blood . . . . .	—	—	—
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	5·00	6·6	—
11. WHITE SUBSTANCE—			
Induration . . . . .	—	—	—
Œdema . . . . .	20·00	20·00	20
Foci of softening . . . . .	—	—	—
Effusion of blood . . . . .	—	—	—
Pus . . . . .	—	—	—
Vascular channels, average . . . . .	40·00	40·00	40
"      "      dilated . . . . .	30·00	40·00	—
"      "      anæmic . . . . .	30·00	20·00	60
Punctiform hæmorrhage . . . . .	5·00	—	20
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	5·00	6·6	—
Cysts . . . . .	—	—	—
12. CORPUS CALLOSUM—			
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
13. CORPORA STRIATA—			
Hæmorrhages . . . . .	5·00	6·6	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
Sclerosis . . . . .	5·00	—	20
Tuberculosis . . . . .	—	—	—
14. LATERAL VENTRICLES—			
Dilatation, moderate . . . . .	15·00	20·00	—
"      excessive . . . . .	15·00	6·6	40
Excess of fluid . . . . .	25·00	20·00	40
Granular ependyma . . . . .	5·00	6·6	—
Hæmorrhage into ventricles . . . . .	5·00	6·6	—
Pus in ventricles . . . . .	5·00	6·6	—
Tumours . . . . .	—	—	—
15. MESENCEPHALON—			
Iter, normal . . . . .	70·00	73·3	60
"      dilated . . . . .	30·00	26·6	40
16. CORPORA QUADRIGEMINA—			
Congested . . . . .	20·00	26·6	—
Normal . . . . .	75·00	73·3	80
Hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Sclerosis . . . . .	5·00	—	20
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Œdema . . . . .	10·00	13·3	—
17. CRURA—			
Normal . . . . .	70·00	66·6	80







	Both Sexes.	Males.	Females.
17. CRURA—			
Congestion . . . . .	20·00	26·6	—
Hæmorrhage . . . . .	5·00	6·6	—
Foci of softening . . . . .	—	—	—
Sclerosis . . . . .	5·00	—	20
Tumours . . . . .	—	—	—
Oedema . . . . .	10·00	13·3	—
18. OPTIC THALAMI—			
Normal . . . . .	90·00	93·3	80
Sclerosis . . . . .	5·00	—	20
Hæmorrhage . . . . .	5·00	6·6	—
Foci of softening . . . . .	—	—	—
Tumours . . . . .	—	—	—
19. OPTIC NERVES—			
Normal . . . . .	95·00	C	80
Sclerosis . . . . .	5·00	—	20
Atrophy . . . . .	—	—	—
20. PITUITARY BODY—			
Size, increased . . . . .	—	—	—
,, normal . . . . .	95·00	C	80
,, diminished . . . . .	5·00	—	20
Structure, normal . . . . .	95·00	C	80
,, softened . . . . .	5·00	—	20
21. CEREBELLUM—			
Membranes, congested . . . . .	30·00	33·3	20
,, normal . . . . .	70·00	66·6	80
,, anæmic . . . . .	—	—	—
,, adherent . . . . .	15·00	20·00	—
,, non-adherent . . . . .	85·00	80·00	C
Hemispheres, equal . . . . .	95·00	93·3	C
,, unequal . . . . .	5·00	6·6	—
Lobes, symmetrical . . . . .	95·00	93·3	C
,, asymmetrical . . . . .	5·00	6·6	—
Cortex, normal . . . . .	85·00	86·6	80
,, atrophied . . . . .	15·00	13·3	20
Hæmorrhages . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	—	—	—
Foci of softening . . . . .	—	—	—
Pus . . . . .	5·00	6·6	—
Oedema . . . . .	10·00	6·6	20
Tumours . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
22. PONTO-BULB—			
Basilar artery, normal . . . . .	80·00	86·6	60
,, ,, atheromatous . . . . .	20·00	13·3	40
,, ,, aneurysmal dilatation . . . . .	—	—	—
Membranes, normal . . . . .	85·00	80·00	C
,, congested . . . . .	15·00	20·00	—
,, anæmic . . . . .	—	—	—
Atrophy, general . . . . .	—	—	—
,, unilateral . . . . .	5·00	—	20
Congestion . . . . .	10·00	13·3	—
Foci of softening . . . . .	—	—	—
Punctiform hæmorrhages . . . . .	5·00	—	20
Tumours . . . . .	—	—	—
Pus . . . . .	—	—	—
Softened floor to fourth ventricle . . . . .	—	—	—
Granular ependyma . . . . .	5·00	6·6	—
23. SPINAL CORD—			
Membranes, congested . . . . .	—	—	—
,, normal . . . . .	—	—	—
,, anæmic . . . . .	—	—	—

	Both Sexes.	Males.	Females.
23. SPINAL CORD—			
Pus . . . . .	—	—	—
Tuberculosis . . . . .	—	—	—
Excess of fluid . . . . .	—	—	—
Congestion . . . . .	—	—	—
Substance, softening . . . . .	—	—	—
„ sclerosis . . . . .	—	—	—
„ tumour . . . . .	—	—	—
„ lesion . . . . .	—	—	—
24. CRANIAL NERVES—			
Abnormalities . . . . .	—	—	—
25. WEIGHTS (in grammes)—			
Brain, total . . . . .	1123	1174	1135
„ right hemisphere . . . . .	500	546	407
„ left hemisphere . . . . .	492	546	377
„ cerebellum . . . . .	127	138	117
„ ponto-bulb . . . . .	23	24·5	19·5
„ skull-cap . . . . .	318	323	299
„ fluid (in ounces) . . . . .	3iii.	3ii.ss.	3iii.
Body, heart (in grammes) . . . . .	273	278·5	205
„ right lung . . . . .	568·5	518	738
„ left lung . . . . .	544	603	548
„ liver . . . . .	1108·5	1194	1114
„ spleen . . . . .	110·5	129·5	116·5
„ right kidney . . . . .	113·5	129	90
„ left kidney . . . . .	117	132	91
„ pancreas . . . . .	—	—	—
„ right adrenal . . . . .	—	—	—
„ left adrenal . . . . .	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—			
Convex . . . . .	40	49	15
Concave . . . . .	51	62·5	20





COMPARATIVE TABLES.—BOTH SEXES.

## BOTH SEXES.

Both Sexes.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
Number of P.M.'s in 3 years		398	95   23·87	84   21·11	30   7·53	41   10·3	48   12·06	35   8·79	42   10·55	21   5·27
Average age at death		49 yrs. 8 m.	41 yrs.	53 yrs. 8 m.	59 yrs. 3 m.	74 yrs. 6 m.	38 yrs.	46 yrs.	50 yrs. 6 m.	29 yrs.
1. SCALP—										
Lesions . . . . .		3·63	2·19	1·23	6 ½	—	17·7	2·85	—	—
New growths . . . . .		1·29	1·09	2·47	3·3	—	—	2·85	—	—
2. SKULL CAP—										
Size, large		4·15	3·29	4·93	3·3	9·75	2·2	2·85	—	9·52
" average . . . . .		81·54	80·22	86·43	93·3	85·36	73·3	91·44	80·48	57·14
" small . . . . .		14·29	16·49	8·64	3·3	4·87	24·4	5·71	19·51	33·3
Thickness, increased		40·77	39·56	43·21	33·3	39·02	55·5	25·71	36·58	42·85
" average		36·88	35·17	35·8	46·6	31·72	31·1	48·57	34·14	52·38
" diminished		22·34	25·27	20·99	20·00	29·26	13·3	25·71	29·26	4·76
Density, increased . . . . .		42·08	36·27	43·21	30·00	51·22	55·5	42·85	46·34	23·8
" average		34·29	41·76	29·62	43·3	26·83	22·2	37·14	36·58	38·1
" diminished		23·63	21·97	27·17	26·6	21·95	22·2	20·00	17·07	38·1
Shape, dolicho-cephalic . . . . .		12·5	14·29	13·58	13·3	19·51	13·3	—	7·31	14·28
" meso-cephalic . . . . .		77·6	72·53	79·02	73·3	80·49	82·2	—	47·62	38·1
" brachio-cephalic . . . . .		9·89	13·18	7·4	13·3	—	4·4	88·56	87·81	38·1
Symmetry, symmetrical . . . . .		50·65	50·56	49·38	63·3	41·47	42·2	11·43	63·41	42·85
" asymmetrical . . . . .		49·35	49·44	50·62	36·6	58·52	57·7	45·72	57·14	57·14
Vascularity, hyperemia . . . . .		27·53	28·57	32·09	20·00	31·72	37·7	65·72	17·07	19·05
" average		62·86	60·44	62·98	76·6	51·22	53·3	65·72	73·16	66·6
" anemic		9·61	10·99	4·93	3·3	17·07	8·8	11·43	9·75	14·28
Vascular channels, number increased		21·82	23·08	20·99	33·3	21·95	20·00	22·86	19·51	9·52
" average		59·22	56·04	60·49	63·3	60·97	66·6	54·28	53·65	61·9
" diminished		18·96	20·88	18·52	3·3	17·07	13·3	22·86	26·82	28·56

Both Sexes.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
2. SKULL CAP—										
Vascular channels, depth increased	.	22.59	21.74	22.2	40.00	21.95	20.00	20.00	24.38	9.52
" " average	.	58.18	57.61	60.49	56.6	56.09	62.2	57.14	51.22	61.9
" " diminished	.	19.22	20.65	17.29	3.3	21.95	17.7	22.86	24.38	28.56
Ossification, deficient	.	11.19	13.18	9.87	20.00	—	6.6	5.71	4.87	9.52
Fractures, recent or remote	.	.25	—	2.47	—	—	—	—	—	—
New growths .	.	.25	—	—	—	—	—	2.85	—	—
3. SKULL BASE—										
Fossae, symmetrical	.	86.23	86.82	85.18	93.3	85.36	80.00	85.7	92.68	80.95
" " asymmetrical	.	13.77	13.18	14.82	6.6	14.63	20.00	14.3	7.31	19.05
Pituitary fossa, deep	.	9.61	4.39	14.82	3.3	14.63	11.1	11.43	4.87	14.28
" " average .	.	69.62	79.12	72.84	70.00	58.52	68.8	57.14	70.73	61.9
" " shallow .	.	20.78	16.49	12.34	26.6	26.83	20.00	31.43	24.38	23.81
Clivus, steep .	.	17.14	12.09	19.75	6.6	17.07	26.6	22.86	9.75	28.56
" " average	.	67.79	74.73	71.61	80.00	53.65	62.2	57.14	73.16	52.38
" " shelving .	.	15.07	13.18	8.64	13.3	29.26	11.1	20.00	17.07	19.05
4. BASAL VESSELS—										
Normal size and arrangement	.	74.02	72.53	72.84	56.6	70.72	82.2	85.7	80.48	66.6
Abnormal size	.	25.2	25.28	33.3	40.00	29.26	17.7	14.3	19.51	33.3
" " arrangement .	.	3.11	5.49	1.23	6.6	4.87	—	2.85	—	4.76
Atheroma, commencing .	.	19.22	25.28	16.05	26.6	14.63	17.7	14.3	17.07	19.05
" " moderate	.	23.12	17.58	28.39	30.00	34.15	11.1	34.29	19.51	9.52
" " very marked	.	18.18	10.99	27.17	36.6	19.51	—	8.57	14.63	—
Aneurysmal dilatation	.	3.11	3.29	3.7	3.3	4.87	—	2.85	4.87	—
Congestion .	.	3.37	2.19	4.93	3.3	—	4.4	8.57	—	4.76
5. CHOROID PLEXUSES—										
Normal .	.	72.4	71.44	73.74	60.00	65.86	75.5	71.42	73.16	76.19
Cystic degeneration	.	16.41	14.29	17.5	20.00	29.26	6.6	5.71	24.38	14.28
Tumours	.	.26	—	1.25	—	—	—	—	—	—
Earthy deposit .	.	3.91	7.69	2.5	13.3	2.43	—	2.85	—	—

Both Sexes.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
5. CHOROID PLEXUSES—										
Congestion . . . . .	.	10.42	9.89	5.0	13.3	4.87	20.00	20.00	4.87	14.28
6. DURA MATER—										
Thickness, normal . . . . .	.	59.74	58.24	56.78	66.6	31.72	66.6	71.42	68.41	80.95
" increased . . . . .	.	40.26	41.76	43.22	33.3	68.28	33.3	28.57	36.58	19.05
Vascularity, hyperemic . . . . .	.	27.53	29.67	25.92	16.6	26.83	40.00	40.00	19.51	19.05
" normal . . . . .	.	63.89	63.74	61.74	76.6	63.42	51.1	57.14	70.72	71.42
" anemic . . . . .	.	8.57	6.59	12.34	6.6	9.75	8.8	2.85	9.75	9.52
Adhesion to cap. slight . . . . .	.	8.83	10.99	8.64	13.3	4.87	8.8	11.43	2.43	9.52
" " marked . . . . .	.	24.94	18.68	19.75	26.6	60.97	24.4	25.71	21.95	4.76
" " absent . . . . .	.	66.24	70.33	71.61	60.00	34.15	66.6	62.86	75.62	85.71
Pachionian bodies, normal . . . . .	.	98.42	98.91	100	96.6	97.57	95.5	100	100	95.24
" " abnormal . . . . .	.	1.55	1.09	—	3.3	2.43	4.4	—	—	4.76
Rusty appearance on inner surface . . . . .	.	3.11	2.19	3.7	—	9.75	2.2	2.85	2.43	—
Hæmorrhage between cap and dura . . . . .	.	4.67	3.29	6.17	6.6	4.87	4.4	8.57	2.48	—
Ossification . . . . .	.	1.03	2.19	2.47	—	—	—	—	—	—
Tumours . . . . .	.	1.03	1.09	1.23	—	—	—	2.85	—	—
7. SINUSES—										
Normal size and arrangement . . . . .	.	87.8	85.72	88.8	100	80.49	84.4	94.28	85.35	90.48
Abnormal size . . . . .	.	11.69	14.29	11.1	—	17.07	15.5	2.85	14.63	9.52
" arrangement . . . . .	.	.51	—	—	—	2.43	—	2.85	—	—
Thrombosis . . . . .	.	25.2	27.47	25.92	13.3	26.83	26.6	11.43	34.14	23.81
Rupture . . . . .	.	.51	—	1.23	—	—	2.2	—	—	—
8. PIA-ARACHNOID—										
Thickness, normal . . . . .	.	29.6	15.38	34.57	23.3	24.39	42.2	34.29	34.14	47.62
" moderately increased . . . . .	.	50.4	48.36	48.15	60.00	56.09	46.6	48.57	56.09	42.85
" excessively increased . . . . .	.	20.00	36.26	17.28	16.6	19.51	11.1	17.14	9.75	9.52
Opacity, universal . . . . .	.	14.8	38.46	7.4	13.3	12.19	2.2	8.57	4.87	4.76
" moderate . . . . .	.	47.79	46.16	50.62	56.6	70.72	42.2	37.14	46.34	23.81
" absent . . . . .	.	37.4	15.38	41.98	30.00	17.07	55.5	54.28	48.77	71.42



Both Sexes.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
8. PIA-ARACHNOID—										
Vascularity, congested	.	45.2	53.85	35.82	46.6	39.02	62.2	45.72	31.7	42.85
" average	.	49.08	38.46	56.78	50.00	56.09	31.1	51.42	63.41	52.88
" anæmic	.	5.71	7.69	7.4	3.3	4.87	6.6	2.85	4.87	4.76
Adhesions (a) to dura, slight	.	18.18	20.88	19.75	20.00	12.19	28.8	14.3	9.75	4.76
" " marked	.	23.9	43.96	13.58	20.00	41.47	8.8	14.3	12.19	14.28
" " absent	.	57.42	35.16	66.6	60.00	46.33	62.2	91.4	78.04	80.95
" (b) to cortex, slight	.	9.34	10.99	9.87	20.00	4.87	13.3	14.3	—	—
" " marked	.	13.51	29.67	9.87	10.00	12.19	8.8	11.43	—	4.76
" " universal	.	12.47	36.26	1.23	16.6	2.43	11.1	—	2.43	9.52
" " absent	.	64.67	23.08	79.03	53.3	80.49	66.6	74.27	97.55	85.71
Arachnoid cysts	.	5.19	6.59	6.17	6.6	7.31	—	5.71	2.43	4.76
Excess of fluid	.	60.78	81.33	67.89	70.00	85.36	17.7	40.00	51.22	33.3
Semi-gelatinous fluid	.	3.37	2.19	4.93	10.00	—	—	2.85	7.31	—
Pus	.	.77	1.09	—	3.3	—	—	—	2.43	—
Tumours	.	.51	—	1.23	3.3	—	—	2.85	—	—
Tuberculosis	.	.25	—	1.23	—	—	—	—	—	—
9. CEREBRUM—										
Hemispheres, equal	.	80.00	76.93	91.36	53.3	78.04	66.6	91.43	95.12	80.95
" unequal	.	20.00	23.07	8.64	46.6	21.95	33.3	8.57	4.87	19.05
Lobes, symmetrical	.	85.44	81.33	93.83	70.00	85.36	75.5	91.43	92.68	90.48
" asymmetrical	.	14.55	18.67	6.17	30.00	14.63	24.4	8.57	7.31	9.52
Convulsions type—simple	.	17.66	15.38	14.82	6.6	9.75	31.1	11.43	12.19	57.14
" normal	.	81.04	83.53	85.18	86.6	87.81	68.8	88.56	87.8	42.85
" " complex	.	1.29	1.09	—	6.6	2.43	—	—	—	—
" " nutrition, normal	.	34.55	18.67	35.82	20.00	12.19	55.5	57.14	53.65	38.1
" " wasted	.	65.45	81.33	64.18	80.00	87.81	44.4	42.85	46.34	61.9
10. GRAY SUBSTANCE—										
Thickness, normal	.	28.16	10.23	27.5	23.3	14.63	51.1	45.72	41.47	40.00
" " atrophied	.	71.84	89.77	72.5	76.6	85.36	48.8	54.28	58.53	60.00
Vascularity, hyperæmic	.	24.48	28.41	13.75	33.3	14.63	46.6	25.71	7.31	40.00

Both Sexes.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiot and Imbecility.
<b>10. GRAY SUBSTANCE—</b>									
Vascularity, average	52·37	47·73	60·00	43·3	60·97	37·7	60·00	65·86	35·00
" anæmic	23·16	23·86	26·25	23·3	24·39	15·5	14·3	26·82	25·00
Foci of softening	6·84	2·27	1·25	46·6	17·07	4·4	—	—	—
Oedema	40·00	64·77	38·75	56·6	65·86	13·3	17·14	17·07	20·00
Hæmorrhage	1·57	1·13	1·25	13·3	—	—	—	—	—
Tumours	2·1	1·13	—	10·00	—	2·2	5·71	2·43	—
Tuberculous	·52	—	—	3·3	—	—	—	—	5·00
<b>11. WHITE SUBSTANCE—</b>									
Induration	1·32	—	—	—	—	11·36	—	—	—
Oedema	41·91	65·92	41·25	60·00	65·86	15·91	17·14	12·19	20·00
Foci of softening	6·89	2·27	1·25	43·3	17·07	6·81	—	—	—
Hæmorrhage	4·5	2·27	7·5	10·00	—	11·36	2·85	—	5·00
Pus	1·32	1·13	1·25	6·6	—	2·27	—	—	—
Vascular channels, average	37·94	28·41	39·75	26·6	36·58	31·82	48·57	46·34	40·00
" dilated	40·58	46·59	38·45	50·00	31·71	54·54	37·14	36·58	30·00
" anæmic	21·48	25·00	21·8	23·3	31·71	13·64	14·3	17·07	30·00
Tumours	1·06	—	—	10·00	—	—	2·85	—	—
Tuberculous	·53	—	—	3·3	—	—	—	—	5·00
Cysts	·26	—	—	3·3	—	—	—	—	—
<b>12. CORPUS CALLOSUM—</b>									
Foci of softening	·26	—	—	3·3	—	—	—	—	—
Tumours	·53	—	—	6·6	—	—	—	—	—
<b>13. CORPORA STRIATA—</b>									
Hæmorrhage	3·15	2·27	2·5	16·6	—	2·27	2·85	—	5·00
Foci of softening	4·48	1·13	6·25	20·00	7·31	2·27	2·85	2·43	—
Tumours	·26	—	—	3·3	—	—	—	—	—
Sclerosis	·26	—	—	—	—	—	—	—	5·00

Both Sexes.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
14. LATERAL VENTRICLES— Dilatation, moderate . . . . . " excessive . . . . . Excess of fluid . . . . . Granular ependyma . . . . . Hæmorrhage into ventricles . . . . . Pus in ventricles . . . . . Tumours in ventricles . . . . .	45·92 11·61 50·93 13·46 1·04 ·52 1·31	54·54 26·14 72·74 26·14 — — —	55·00 7·5 57·5 11·25 — — 1·25	46·6 26·6 66·6 3·3 6·6 3·3 6·6	60·97 17·07 73·16 14·63 — — 2·43	27·28 2·27 18·18 9·09 2·27 — —	28·57 2·85 17·14 8·57 — — 2·85	36·58 4·87 31·7 9·75 — — —	15·00 15·00 25·00 5·00 5·00 5·00 —
15. MESENCEPHALON— Iter, normal . . . . . " dilated . . . . .	46·83 53·17	23·86 76·14	50·00 50·00	30·00 70·00	17·07 82·93	75·00 25·00	79·42 20·58	63·41 36·58	70·00 30·00
16. CORPORA QUADRIGEMINA— Congested . . . . . Normal . . . . . Hæmorrhages . . . . . Foci of softening . . . . . Sclerosis . . . . . Tuberculosis . . . . . Gdema . . . . .	9·23 59·9 — ·26 ·26 — 31·14	6·81 40·66 — — — — 54·54	8·64 66·6 — — — — 24·69	16·6 46·6 — — — — 36·6	2·43 39·02 — — — — 60·97	18·18 75·00 — — — — 9·09	2·94 91·18 — — — — 8·82	4·87 82·94 — — — — 12·19	20·00 75·00 — 5·00 5·00 — 10·00
17. CRURA— Normal . . . . . Congestion . . . . . Hæmorrhage . . . . . Foci of softening . . . . . Sclerosis . . . . . Gdema . . . . .	60·69 8·7 ·26 ·26 ·26 30·87	40·66 5·68 — — — 54·54	70·37 6·17 — — — 23·46	46·6 20·00 3·3 — 36·6	39·02 2·43 — — 60·97	75·00 18·18 — — 9·09	88·22 5·88 — — 8·22	82·94 4·87 — — 12·19	70·00 20·00 5·00 — 5·00 10·00
18. OPTIC THALAMI— Normal . . . . . Hæmorrhage . . . . .	96·55 1·05	100 —	97·5 1·25	83·3 3·3	97·57 —	97·72 2·27	100 —	100 —	90·00 5·00

Both Sexes.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
18. OPTIC THALAMI—									
Foci of softening . . . . .	1.58	—	1.25	13.3	2.43	—	—	—	—
Sclerosis . . . . .	.26	—	—	—	—	—	—	—	5.00
19. OPTIC NERVES—									
Normal . . . . .	98.68	100	98.75	93.3	100	100	97.05	100	95.00
Atrophy . . . . .	1.04	—	1.25	6.6	—	—	2.94	—	—
Sclerosis . . . . .	.26	—	—	—	—	—	—	—	5.00
20. PITUITARY BODY—									
Size, increased . . . . .	2.91	2.27	3.75	3.3	4.87	—	5.88	2.43	—
" normal . . . . .	88.8	93.19	83.75	86.6	85.36	95.46	76.47	95.12	95.00
" diminished . . . . .	8.2	4.54	12.5	10.00	9.75	4.54	17.64	2.43	5.00
Structure, normal . . . . .	87.04	88.64	81.25	90.00	78.04	93.19	85.28	92.68	95.00
" softened . . . . .	12.96	11.36	18.75	10.00	21.95	6.81	14.71	7.31	5.00
21. CEREBELLUM—									
Membranes, vascularity, hyperæmic . . . . .	27.63	30.00	20.00	30.00	21.95	44.4	32.35	17.07	30.00
" average . . . . .	67.63	64.4	73.75	63.3	75.62	48.8	64.7	80.48	70.00
" anæmic . . . . .	4.73	5.56	6.25	6.6	2.43	6.6	2.94	2.43	—
" adhesions, adherent . . . . .	12.63	23.59	8.75	13.3	7.31	8.8	8.82	4.87	15.00
" non-adherent . . . . .	87.37	76.41	91.25	86.6	92.69	91.1	91.18	95.12	85.00
Hemispheres, equal . . . . .	97.62	97.7	100	93.3	100	95.5	97.05	97.55	95.00
" unequal . . . . .	2.37	2.2	—	6.6	—	4.4	2.94	2.43	5.00
Lobes, symmetrical . . . . .	97.62	97.7	100	93.3	100	95.5	97.05	97.55	95.00
" asymmetrical . . . . .	2.37	2.2	—	6.6	—	4.4	2.94	2.43	5.00
Cortex, normal . . . . .	77.12	67.7	75.00	73.3	65.86	82.2	94.11	87.8	85.00
" atrophied . . . . .	32.88	32.2	25.00	26.6	34.14	17.7	5.88	12.19	15.00
Hæmorrhages . . . . .	1.3	1.1	2.5	—	—	4.4	—	—	—
Foci of softening . . . . .	2.36	3.3	1.25	13.3	2.43	—	—	—	—
Pus . . . . .	.52	—	—	3.3	—	—	—	—	5.00
Œdema . . . . .	30.00	51.1	28.75	36.6	48.78	13.3	8.82	7.31	10.00
Tumours . . . . .	.78	—	—	3.3	—	—	5.88	2.43	—

Both Sexes.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
21. CEREBELLUM—										
Tuberculosis . . . . .	. . . . .	.26	—	1.25	—	—	—	—	—	—
22. PONS-BULB—										
Basilar artery, normal . . . . .	. . . . .	60.37	63.3	55.00	50.00	24.39	82.2	76.47	60.97	80.00
" " atheromatous . . . . .	. . . . .	39.63	36.6	45.00	50.00	75.61	17.7	23.52	39.02	20.00
" " aneurysmal dilatation . . . . .	. . . . .	2.62	—	5.00	3.3	9.75	—	—	2.43	—
Membranes, normal . . . . .	. . . . .	73.44	63.3	77.5	80.00	75.61	64.4	64.7	85.35	85.00
" congested . . . . .	. . . . .	22.42	31.1	13.75	20.00	19.51	31.1	32.35	14.63	15.00
" anæmic . . . . .	. . . . .	4.12	5.56	8.75	—	4.87	4.4	2.94	—	—
" Atrophy, general . . . . .	. . . . .	.52	—	1.25	3.3	—	—	—	—	—
" " unilateral . . . . .	. . . . .	1.31	1.1	—	3.3	—	4.1	2.94	—	5.00
Congestion . . . . .	. . . . .	20.73	28.89	12.5	23.3	17.07	24.1	25.71	14.63	10.00
Foci of softening . . . . .	. . . . .	1.57	2.2	—	13.3	—	2.2	—	—	—
Hæmorrhages . . . . .	. . . . .	1.83	2.2	1.25	3.3	—	2.2	—	—	5.00
Tumours . . . . .	. . . . .	.26	—	1.25	—	—	—	—	—	—
" Pus . . . . .	. . . . .	.26	—	—	3.3	—	—	—	—	—
Softened floor to fourth ventricle . . . . .	. . . . .	.78	1.1	—	3.3	2.43	—	—	—	—
Granular ependyma . . . . .	. . . . .	14.43	30.00	10.00	10.00	12.19	6.6	11.43	9.75	5.00
23. SPINAL CORD—										
Membranes, hyperæmia . . . . .	. . . . .	2 cases	—	—	1 case	—	—	1 case	—	—
" normal . . . . .	. . . . .	4 cases	1 case	1 case	—	—	—	—	—	—
" anæmia . . . . .	. . . . .	—	—	—	—	—	—	—	—	—
" Pus . . . . .	. . . . .	1 case	—	—	1 case	—	—	—	—	—
Tuberculosis . . . . .	. . . . .	—	—	—	—	—	—	—	—	—
Excess of fluid . . . . .	. . . . .	2 cases	—	—	—	—	—	—	—	—
Congestion . . . . .	. . . . .	1 case	—	1 case	1 case	—	—	—	—	—
Substance, softening . . . . .	. . . . .	—	—	—	—	—	—	1 case	—	—
" " sclerosis . . . . .	. . . . .	2 cases	—	—	—	—	—	—	—	—
" " tumour . . . . .	. . . . .	1 case	—	1 case	—	—	—	—	—	—
" " lesion . . . . .	. . . . .	1 case	—	—	1 case	—	—	—	—	—

Both Sexes.		Normal Weights.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
24. CRANIAL NERVES—											
Abnormalities.		—	1 case	—	—	—	—	—	—	—	—
25. WEIGHTS (in grammes)—											
Brain, total.		1325	1298	1246	1288	1384.5	1280.5	1283	1326	1261	1123
" right hemisphere.		—	549	520	550	569	545.	569	574.5	567	500
" left hemisphere.		—	542	523	530	531	542.5	561	572.5	566	492
" cerebellum.		—	141.5	146	143	142	143	137	145.5	144.5	127
" ponto-bulb.		—	27	26	26	25	27	26	25.5	26.5	23
" skull-cap.		—	376	374	368	388	394.5	386.5	369.5	370	318
" cerebro-spinal fluid (in ounces).		5½	5½.	5½.	5½.	5½.	5½.	5½.	5½ ss.	5½.	5½.
Body, heart (in grammes)		283.5	301.5	288	288	338	338	275	298.5	318.5	273
" right lung.		581	590	611	608	523.5	598	654	671.5	692	568.5
" left lung.		510	545	533	517	526	615	561	572	564.5	544
" liver.		1394	1277	1291	1238	1314.5	1202	1330	1445	1387.5	1108.5
" spleen.		156	139	132	137	150	147	169	138.5	157	110.5
" right kidney.		149	122.5	130	112	126	130	121	138	127	113.5
" left kidney.		156	130	136	122	130	125	136	142	124	117
" pancreas.		—	—	—	—	—	—	—	—	—	—
" right adrenal.		—	9	9.5	—	—	8	—	—	8	—
" left adrenal.		—	12	10	—	—	18	—	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—											
Convex.		45.5	29	40	25.5	28	23	37	24	26	40
Concave.		47.5	30	36.5	25	25.5	22	30	25	29	51

COMPARATIVE TABLES.—MALES.

## MALES.

Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
Number of P.M.'s in 3 years	245	74   30-21	42   17-14	18   7-34	31   12-65	27   11-07	21   8-57	15   6-12	16   6-53
Average age at death	48 ys. 6 m.	40 ys. 8 m.	53 ys. 4 m.	58 ys.	75 ys.	38 ys. 6 m.	47 ys.	49 ys.	27 ys. 6 m.
1. SCALP—									
Lesions	4-58	2-81	2-43	5-5	—	22-2	4-76	—	—
New growths	83	—	4-87	—	—	—	—	—	—
2. SKULL CAP—									
Size, large	5-41	4-16	7-31	—	9-67	3-71	4-76	—	12-5
" average	84-17	81-96	90-26	100	87-11	74-06	90-48	86-6	68-75
" small	10-42	13-88	2-43	—	3-22	22-2	4-76	13-3	18-75
Thickness, increased	39-17	32-39	46-34	44-4	35-48	55-5	19-05	40-00	43-75
" average	38-75	38-03	31-71	38-8	38-7	33-3	57-14	33-3	56-25
" diminished	22-08	29-58	21-95	16-6	25-81	11-1	23-81	26-6	—
Density, increased	43-33	33-80	53-66	38-8	51-62	55-5	42-85	53-3	18-75
" average	34-17	40-85	26-83	44-4	25-81	18-51	38-1	40-00	43-75
" diminished	22-5	25-35	19-51	16-6	22-58	25-93	19-05	6-6	37-5
Shape, dolicocephalic	12-14	14-08	9-75	11-1	19-35	14-81	—	6-6	12-5
" mesocephalic	76-16	71-84	78-05	72-2	80-64	81-46	90-48	86-6	50-00
" brachiocephalic	11-72	14-08	12-19	16-6	—	3-71	9-52	6-6	37-5
Symmetry, symmetrical	51-25	52-12	53-66	66-6	35-48	40-73	66-6	60-00	50-00
" asymmetrical	47-75	47-88	46-34	33-3	64-51	59-25	33-3	40-00	50-00
Vascularity, hyperemia	25-00	28-17	21-95	22-2	29-03	37-03	19-05	—	25-00
" average	65-82	64-79	70-74	83-3	54-84	55-5	71-42	80-00	62-5
" anemia	9-17	7-04	7-31	—	16-13	7-40	9-52	20-00	12-5
Vascular channels, number, increased	19-17	21-12	19-51	33-3	16-31	18-51	14-28	13-3	12-5
" average	61-25	60-57	56-11	61-1	64-51	62-97	66-6	60-00	62-5
" diminished	19-58	18-31	24-38	5-5	19-35	18-51	19-05	26-6	25-00



Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
2. SKULL CAP—									
Vascular channels, depth, increased	19.58	20.83	19.51	44.1	16.13	18.51	9.52	13.3	12.5
" " " average .	60.00	61.11	58.54	50.00	58.06	59.25	66.6	60.00	62.5
" " " diminished	20.42	18.06	21.95	5.5	25.81	22.2	23.81	26.6	25.00
Ossification, deficient .	12.08	14.08	4.87	16.6	—	3.71	9.52	—	6.25
Fractures, recent or remote	.41	—	2.43	—	—	—	—	—	—
New growths.	—	—	—	—	—	—	—	—	—
3. SKULL BASE—									
Fosse, symmetrical	85.84	87.34	85.36	88.8	80.64	88.8	85.71	93.3	75.00
" " asymmetrical	14.16	12.67	14.64	11.1	19.35	11.1	14.28	6.6	25.00
Pituitary fossa, deep	9.16	2.81	7.31	5.5	16.13	11.1	19.05	13.3	12.5
" " " average .	68.33	80.27	73.18	61.1	54.84	70.36	57.14	60.00	62.5
" " " shallow	22.5	16.92	19.51	33.3	29.03	18.51	23.81	26.6	25.00
Clivus, steep .	14.94	9.85	9.75	11.1	16.13	29.62	14.28	13.3	31.25
" " " average .	65.98	73.23	75.61	72.2	51.62	59.25	57.14	66.6	50.00
" " " shelving	19.08	16.92	14.64	16.6	32.25	11.1	28.57	20.00	18.75
4. BASAL VESSELS—									
Normal size and arrangement	70.00	70.41	68.29	61.1	70.96	77.1	76.19	73.3	62.5
Abnormal size	29.17	28.17	31.71	38.8	29.03	22.2	23.81	26.6	37.5
" " arrangement	3.33	5.63	2.43	—	3.22	—	4.76	—	6.25
Atheroma, commencing .	19.58	25.35	14.64	22.2	12.9	18.51	19.05	20.00	18.75
" " moderate	24.17	19.72	34.15	27.7	32.25	11.1	42.85	13.3	6.25
" " very marked .	18.75	9.86	29.27	44.4	45.16	—	4.76	20.00	—
Aneurysmal dilatation	2.91	2.81	4.87	—	6.45	—	—	6.6	—
Congestion	5.41	2.81	9.75	5.5	—	7.4	14.28	—	6.25
5. CHOROIO PLEXUSES—									
Normal	70.42	73.23	68.29	61.1	64.51	74.06	76.19	66.6	75.00
Cystic degeneration	15.42	12.67	19.51	16.6	32.25	7.4	—	33.3	12.5
Tumours	.41	—	2.43	—	—	—	—	—	—
Earthy deposit	5.00	7.04	4.87	16.6	3.22	—	4.76	—	—

Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
5. CHOROIO PLEXUSES— Congestion	11·25	11·26	4·87	22·2	—	22·2	19·05	—	18·75
6. DURA MATER— Thickness, normal.	56·25	60·56	48·77	61·1	29·03	55·5	66·6	60·00	87·5
" increased	43·75	39·44	51·23	38·8	70·96	44·4	33·3	40·00	12·5
Vascularity, hyperemia	29·17	30·14	21·95	27·7	29·03	40·73	38·1	26·6	25·00
normal	62·5	64·38	63·41	72·2	61·28	51·85	57·14	53·3	68·75
" anaemia	8·33	5·48	14·64	—	9·67	7·4	4·76	20·00	6·25
Adhesion to cap, slight	10·00	12·67	9·75	16·6	6·45	7·4	14·28	—	6·25
" marked	28·33	15·49	31·71	38·8	64·51	37·03	23·81	6·6	6·25
" absent.	61·66	71·84	58·54	44·4	29·03	55·5	61·9	93·3	87·5
Pachionian bodies, normal	97·92	98·58	100	94·4	100	92·58	100	100	93·75
" " abnormal	2·08	1·42	—	5·5	—	7·4	—	—	6·25
Rusty on inner surface	3·33	2·81	4·87	—	9·67	—	4·76	—	—
Hæmorrhage between cap and dura	7·5	2·81	12·19	5·5	3·22	7·4	14·28	6·6	—
Ossification	·83	2·81	—	—	—	—	—	—	—
Tumours	·83	—	2·43	—	—	—	—	—	—
7. SINUSES— Normal size and arrangement.	85·42	84·51	87·81	100	74·18	85·17	95·24	73·3	87·5
Abnormal size	14·17	15·49	12·19	—	22·58	14·81	4·76	26·6	12·5
" arrangement	·41	—	—	—	3·22	—	—	—	—
Thrombosis	26·25	25·35	29·27	16·6	32·25	25·93	14·28	53·3	12·5
Rupture	·83	—	2·43	—	—	3·7	—	—	—
8. PIA-ARACHNOID— Thickness, normal.	21·67	14·08	21·95	33·3	12·9	37·03	19·05	6·6	50·00
" moderately increased	53·75	53·52	53·66	44·4	64·51	48·15	52·38	73·3	37·5
" excessively increased	24·58	32·40	24·38	22·2	22·58	14·81	28·56	20·00	12·5
Opacity, universal.	19·17	40·85	7·31	22·2	12·9	3·7	14·28	6·6	6·25
" moderate.	48·33	45·07	51·23	38·8	67·74	48·15	47·62	60·00	25·00
" absent	32·5	14·08	41·46	38·8	19·35	48·15	38·1	33·3	68·75

Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
8. PLA-ARACHNOID—									
Vascularity, congested	50.21	60.56	31.71	50.00	38.7	66.6	47.62	40.00	56.25
" average	44.81	32.40	60.98	50.00	58.06	29.62	47.62	53.3	37.5
" anæmic	4.98	7.01	7.31	—	3.22	3.7	4.76	6.6	6.25
Adhesions (a) to dura, slight	17.92	21.12	17.08	11.1	12.9	29.62	19.05	6.6	6.25
" marked	29.17	42.25	19.51	27.1	41.93	14.81	14.28	20.00	18.75
" absent	52.91	36.63	63.41	61.1	45.16	55.5	66.6	73.3	75.00
(b) to cortex, slight	10.00	11.26	12.19	16.6	6.45	14.81	14.28	—	—
" marked	15.00	26.76	9.75	5.5	16.13	14.81	9.52	—	6.25
" universal	15.42	39.44	—	16.6	—	11.1	—	6.6	12.5
" absent	59.58	22.54	78.06	61.1	77.41	59.25	76.19	93.3	81.25
Arachnoid cysts	5.00	7.04	2.43	5.5	6.45	—	9.52	—	6.25
Excess of fluid	65.82	83.10	73.18	61.1	87.1	22.2	52.38	66.6	31.25
Semi-gelatinous fluid	3.33	1.40	4.87	11.1	—	—	4.76	13.3	—
Pus	.41	1.40	—	—	—	—	—	—	—
Tumours	.41	—	2.43	5.5	—	—	—	—	—
Tuberculosis	.41	—	2.43	—	—	—	—	—	—
9. CEREBRUM—									
Hemispheres, equal	78.34	76.06	85.36	55.5	77.41	70.36	95.24	93.3	87.5
" unequal	21.66	23.94	14.64	44.4	22.58	29.62	4.76	6.6	12.5
Lobes, symmetrical	85.84	80.28	92.69	83.3	83.86	81.46	90.48	93.3	93.75
" asymmetrical	14.16	19.72	7.31	16.6	16.13	18.51	9.52	6.6	6.25
Convulsions—type, simple	18.33	14.08	9.75	11.1	9.67	33.3	9.52	20.00	62.5
" normal	80.00	84.52	90.25	83.3	87.1	66.6	90.48	80.00	37.5
" complex.	1.66	1.40	—	5.5	3.22	—	—	—	—
—nutrition, normal	28.33	16.90	29.26	16.6	12.9	44.4	47.62	46.6	37.5
" wasted	71.66	83.10	70.74	83.3	87.1	55.5	52.38	53.3	62.5
10. GRAY SUBSTANCE—									
Thickness, normal.	21.61	8.82	19.51	16.6	12.9	40.73	38.1	33.3	40.00
" atrophied	78.38	91.18	80.49	83.3	87.1	59.25	61.9	66.6	60.00
Vascularity, hyperæmic	27.12	30.88	12.19	38.8	12.9	40.73	28.57	13.3	53.3



Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
14. LATERAL VENTRICLES—									
Dilatation, moderate	48·92	54·42	58·55	38·8	58·06	34·62	33·3	46·6	20·00
„ excessive	13·74	27·94	9·75	33·3	19·35	3·84	—	6·6	6·6
Excess of fluid	57·08	73·52	68·29	61·1	74·18	23·08	28·56	40·00	20·00
Granular ependyma	16·74	27·94	14·64	—	19·35	15·38	9·52	13·3	6·6
Hæmorrhage into ventricles	—	—	—	5·5	—	3·84	—	—	6·6
Pus in ventricles	·42	—	—	—	—	—	—	—	6·6
Tumours	2·14	—	2·43	11·1	3·22	—	—	—	—
15. MESENCEPHALON—									
Iter, normal	39·14	20·58	41·46	38·8	12·9	65·37	66·6	53·3	73·3
„ dilated	60·85	79·42	58·54	61·1	87·1	34·62	33·3	46·6	26·6
16. CORPORA QUADRIGEMINA—									
Congested	11·02	8·82	9·75	22·2	3·22	19·23	4·76	6·6	26·6
Normal	52·54	41·18	63·41	44·4	32·25	73·08	90·48	66·6	73·3
Hæmorrhages	—	—	—	—	—	—	—	—	—
Foci of softening	—	—	—	—	—	—	—	—	—
Sclerosis	—	—	—	—	—	—	—	—	—
Tuberculous	—	—	—	—	—	—	—	—	—
Edema	37·28	54·42	29·27	33·3	67·74	11·54	9·52	26·6	13·3
17. CRURA—									
Normal	53·38	41·18	63·41	44·4	32·25	76·92	90·48	66·6	66·6
Congestion	10·17	7·35	9·75	22·2	3·22	15·38	4·76	6·6	26·6
Hæmorrhage	·42	—	—	—	—	—	—	—	6·6
Foci of softening	·42	—	—	5·5	—	—	—	—	—
Sclerosis	—	—	—	—	—	—	—	—	—
Edema	37·28	54·42	29·27	38·8	67·74	11·54	9·52	26·6	13·3
18. OPTIC THALAMI—									
Normal	97·42	100	97·57	88·8	96·77	96·15	100	100	93·3
Hæmorrhage	1·69	—	2·43	5·5	—	3·84	—	—	6·6



Males.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
21. CEREBELLUM— Tuberculosis . . . . .	.42	—	2.43	—	—	—	—	—	—
22. PONS-OBELIX— Basilar artery, normal . . . . .	57.57	61.43	48.77	61.1	22.58	81.46	71.42	40.00	86.6
" " atheromatous . . . . .	42.43	38.57	51.23	38.8	77.41	18.51	28.57	60.00	13.3
" " aneurysmal dilatation . . . . .	2.1	—	4.87	—	9.67	—	—	—	—
Membranes, normal . . . . .	71.06	64.27	73.18	83.3	77.41	62.97	61.9	73.3	80.00
congested . . . . .	25.22	32.85	17.08	16.6	19.35	29.62	33.3	26.6	20.00
anemia . . . . .	3.71	9.74	—	—	3.22	7.4	4.76	—	—
Atrophy, general . . . . .	.84	2.88	2.43	5.5	—	—	—	—	—
" unilateral . . . . .	.84	—	—	—	—	7.4	4.76	—	—
Congestion . . . . .	23.53	30.00	14.64	22.2	16.13	25.93	28.57	26.6	13.3
Foci of softening . . . . .	1.26	1.44	—	11.1	—	3.7	—	—	—
Hemorrhages . . . . .	1.69	1.44	—	5.5	—	3.7	—	—	—
Tumours . . . . .	.42	—	2.43	—	—	—	—	—	—
Pus . . . . .	—	—	—	—	—	—	—	—	—
Softened floor to fourth ventricle . . . . .	.84	1.44	—	—	3.22	—	—	—	—
Granular ependyma . . . . .	17.65	28.57	17.08	11.1	16.13	11.1	9.52	20.00	6.6
23. SPINAL CORD— Membranes, hyperemia . . . . .	2 cases	—	—	1 case	—	—	1 case	—	—
" normal . . . . .	3 cases	1 case	1 case	1 case	—	—	—	—	—
" anemic . . . . .	—	—	—	—	—	—	—	—	—
Pus . . . . .	—	—	—	—	—	—	—	—	—
Tuberculosis . . . . .	—	—	—	—	—	—	—	—	—
Excess of fluid . . . . .	2 cases	—	—	—	—	—	—	—	—
Congestion . . . . .	1 case	—	1 case	1 case	—	—	—	—	—
Substance, softening . . . . .	—	—	—	—	—	—	1 case	—	—
sclerosis . . . . .	2 cases	—	—	—	—	—	—	—	—
tumour . . . . .	1 case	—	—	—	—	—	—	—	—
" lesion . . . . .	1 case	—	1 case	—	—	—	—	—	1 case



Males.		Normal Weights.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
24. CRANIAL NERVES—											
Abnormalities . . . . .			—	—	—	—	—	—	—	—	—
25. WEIGHTS (in grammes)—											
Brain, total . . . . .		1403	1344	1263	1378	1406·5	1327	1310	1355·5	1555	1174
" right hemisphere . . . . .		—	568·5	528·5	574·5	585	567	576	589·5	626	546
" left hemisphere . . . . .		—	559·5	538	545·5	543	562	566	586·5	624·5	546
" cerebellum . . . . .		—	146·5	150	152	144	148	138	149	153	138
" ponto-bulb . . . . .		—	28	27	26	26	28·5	26	26·5	29	24·5
" skull-cap . . . . .		—	381·5	382	373	402	409	404	384	389	323
" cerebro-spinal fluid (in ounces)		3½j.	3iv. ss.	3v. ss.	3iv. ss.	3v.	3v. ss.	3iii.	3iii.	3iii. ss.	3iii. ss.
Body, heart (in grammes)		312	325	297	332	359	360·5	295	318	361·5	278·5
" right lung . . . . .		680	615·5	637	728	585	666	735	788·5	863	518
" left lung . . . . .		595	632	613	683	592	664	658	774·5	863	603
" liver . . . . .		1502	1327	1330·5	1396	1314	1253·5	1362	1461	1546·5	1194
" spleen . . . . .		170	149·5	133	169	168	171	184	131	170	129·5
" right kidney . . . . .		156	130·5	137	128	127·5	139·5	126	149·5	132·5	129
" left kidney . . . . .		163	137	141	139	132	132	139	150	127	132
" pancreas . . . . .		—	—	—	—	—	—	—	—	—	—
" right adrenal . . . . .		—	9	9	10	—	—	—	—	—	—
" left adrenal . . . . .		—	13	10	14	—	—	—	—	—	—
26. BREAKING STRAIN OF RIBS (in pounds)—											
Convex . . . . .		62	37	46·5	37·5	33	27	42	36	37	49
Concave . . . . .		65	38	42	36·5	33	25·5	37·5	36	45	62·5



COMPARATIVE TABLES.—FEMALES.

## FEMALES.

Females.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
Number of P.M.'s in 3 years . . . . .		153	21   13.73	42   27.45	12   7.84	10   6.53	21   13.73	14   9.15	27   17.65	5   3.26
Average age at death . . . . .		51 ys. 3 m.	42 ys.	54 ys. 4 m.	59 ys. 9 m.	75 ys. 6 m.	36 ys.	45 ys.	51 ys.	39 ys.
1. SCALP—										
Lesions . . . . .		2.06	—	—	8.3	—	11.1	—	—	—
New growths . . . . .		2.06	5.00	—	8.3	—	—	7.14	—	—
2. SKULL CAP—										
Size, large . . . . .		2.06	—	2.5	8.3	10.00	—	—	—	—
" average . . . . .		77.24	70.00	82.5	83.3	80.00	72.3	92.84	76.92	20.00
" small . . . . .		20.69	30.00	15.00	8.3	10.00	27.7	7.14	23.07	80.00
Thickness, increased . . . . .		43.45	65.00	40.00	16.6	50.00	55.5	35.71	34.62	40.00
" average . . . . .		33.79	25.00	40.00	58.3	10.00	27.7	35.71	34.62	40.00
" diminished . . . . .		22.76	10.00	20.00	25.00	40.00	16.6	28.57	30.76	20.00
Density, increased . . . . .		40.00	45.00	32.5	16.6	50.00	55.5	42.85	42.3	40.00
" average . . . . .		34.48	45.00	32.5	41.6	30.00	27.7	35.71	34.62	20.00
" diminished . . . . .		25.52	10.00	35.00	41.6	20.00	16.6	21.42	23.07	40.00
Shape, dolico-cephalic . . . . .		13.11	15.00	17.5	16.6	20.00	11.1	—	7.69	20.00
" meso-cephalic . . . . .		80.00	75.00	80.00	75.00	80.00	83.3	85.7	88.46	40.00
" brachio-cephalic . . . . .		6.89	10.00	2.5	8.3	—	5.5	14.28	3.84	40.00
Symmetry, symmetrical . . . . .		49.66	45.00	45.00	58.3	60.00	44.4	35.71	65.38	20.00
" asymmetrical . . . . .		50.34	55.00	55.00	41.6	40.00	55.5	64.28	34.62	80.00
Vascularity, hyperemia . . . . .		31.73	30.00	42.5	16.6	40.00	38.8	28.57	26.92	—
" average . . . . .		57.93	45.00	55.00	75.00	40.00	50.00	57.14	69.24	80.00
" anemia . . . . .		10.34	25.00	2.5	8.3	20.00	11.1	14.28	3.84	20.00
Vascular channels, number, increased . . . . .		26.21	30.00	22.5	33.3	40.00	22.2	35.71	23.07	—
" average . . . . .		55.86	40.00	65.00	66.6	50.00	72.2	35.71	50.00	60.00
" diminished . . . . .		17.93	30.00	12.5	—	10.00	5.5	28.57	26.92	40.00

Females.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
2. SKULL CAP—									
Vascular channels, depth, increased	27.59	25.00	25.00	33.3	40.00	22.3	35.71	30.76	—
" " average	55.18	45.00	62.5	66.6	50.00	66.6	42.85	46.16	60.00
" " diminished	17.23	30.00	12.5	—	10.00	11.1	21.42	23.07	40.00
Ossification, deficient	11.04	10.00	15.00	25.00	—	11.1	—	7.69	20.00
Fractures, recent or remote	—	—	—	—	—	—	—	—	—
New growths	.68	—	—	—	—	—	7.14	—	—
3. SKULL BASE—									
Fosse, symmetrical	86.9	85.00	85.00	100	100	66.6	85.7	92.31	100
" " asymmetrical	13.1	15.00	15.00	—	—	33.3	14.28	7.69	—
Pituitary fossa, deep	10.34	10.00	22.5	—	10.00	11.1	—	—	20.00
" " average	71.72	75.00	72.5	83.3	70.00	66.6	57.14	76.92	60.00
" " shallow	17.94	15.00	5.00	16.6	20.00	22.2	42.85	23.07	20.00
Clivus, steep	20.83	20.00	30.00	—	20.00	22.2	35.71	7.69	80.00
" " average	70.84	80.00	67.5	91.6	60.00	66.6	57.14	76.92	20.00
" " shelving	8.33	—	2.5	8.3	20.00	11.1	7.14	15.38	—
4. BASAL VESSELS—									
Normal size and arrangement	80.68	80.00	77.5	50.00	70.00	88.8	100	84.61	—
Abnormal size	18.62	15.00	22.5	41.6	30.00	11.1	—	15.38	—
" " arrangement	2.75	5.00	—	16.6	10.00	—	—	—	—
Atheroma, commencing	18.62	25.00	17.5	33.3	20.00	16.6	7.14	15.38	20.00
" " moderate	21.38	10.00	22.5	33.3	40.00	11.1	21.42	23.07	20.00
" " very marked	17.24	15.00	25.00	25.00	40.00	—	14.28	11.53	—
Aneurysmal dilatation	3.44	5.00	2.5	8.3	—	—	7.14	3.84	—
Congestion	—	—	—	—	—	—	—	—	—
5. CHOROID PLEXUSES—									
Normal	75.7	65.00	79.5	58.3	70.00	77.7	64.28	76.92	80.00
Cystic degeneration	18.06	20.00	15.37	25.00	20.00	5.5	14.28	19.23	20.00
Tumours	—	—	—	—	—	—	—	—	—
Early deposit	2.08	10.00	—	8.3	—	—	—	—	—

Females.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
5. CHOROID PLEXUSES—										
Congestion . . . . .	.	9.02	5.00	5.13	—	20.00	6.6	21.42	7.69	—
6. DURA MATER—										
Thickness, normal . . . . .	.	65.52	50.00	65.00	75.00	40.00	83.3	78.56	65.38	60.00
" increased . . . . .	.	34.48	50.00	35.00	25.00	60.00	16.6	21.42	34.62	40.00
Vascularity, hyperemia . . . . .	.	24.83	25.00	30.00	—	20.00	38.8	42.85	15.38	—
" normal . . . . .	.	66.21	65.00	60.00	83.3	70.00	50.00	57.14	80.76	80.00
" anemic . . . . .	.	8.96	10.00	10.00	16.6	10.00	11.1	—	3.84	20.00
Adhesion to cap, slight . . . . .	.	6.89	5.00	7.5	8.3	—	11.1	7.14	3.84	20.00
" marked . . . . .	.	19.31	30.00	7.5	8.3	50.00	5.5	28.57	30.76	—
" absent . . . . .	.	73.79	65.00	85.00	83.3	90.00	83.3	64.28	65.38	80.00
Pachionian bodies, normal . . . . .	.	99.32	100	100	100	10.00	100	100	100	100
" " abnormal . . . . .	.	.68	—	—	—	10.00	—	—	—	—
Rusty on inner surface . . . . .	.	2.75	—	2.5	—	10.00	5.5	—	3.84	—
Hemorrhage between cap and dura . . . . .	.	1.37	—	—	8.3	10.00	—	—	—	—
Ossification . . . . .	.	1.37	—	5.00	—	—	—	—	—	—
Tumours . . . . .	.	1.37	5.00	—	—	—	—	—	—	—
7. SINUSES—										
Normal size and arrangement . . . . .	.	91.74	90.00	90.00	100	100	83.3	92.84	92.31	100
Abnormal size . . . . .	.	7.58	10.00	10.00	—	—	16.6	—	7.69	—
" arrangement . . . . .	.	.68	—	—	—	—	—	7.14	—	—
Thrombosis . . . . .	.	23.45	35.00	22.5	8.3	20.00	27.7	7.14	23.07	60.00
Rupture . . . . .	.	—	—	—	—	—	—	—	—	—
8. PIA-ARACHNOID—										
Thickness, normal . . . . .	.	42.76	20.00	47.5	8.3	60.00	50.00	57.14	50.00	40.00
" moderately increased . . . . .	.	44.82	30.00	42.5	83.3	30.00	44.1	42.85	46.16	60.00
" excessively increased . . . . .	.	12.42	50.00	10.00	8.3	10.00	5.5	—	3.84	—
Opacity, universal . . . . .	.	7.58	30.00	7.5	—	10.00	—	—	3.84	20.00
" moderate . . . . .	.	46.9	50.00	50.00	83.3	80.00	33.3	21.42	38.46	80.00
" absent . . . . .	.	45.52	20.00	42.5	16.6	10.00	66.6	78.56	57.69	—

Females.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
8. PIA-RACHNOID—										
Vascularity, congested .	.	36.81	30.00	40.00	41.6	40.00	55.5	42.85	26.92	—
" average .	.	56.25	60.00	52.5	50.00	50.00	33.3	57.14	69.24	100
" anemic .	.	6.94	10.00	7.5	8.3	10.00	11.1	—	3.84	—
Adhesions (a) to dura, slight .	.	18.62	20.00	22.5	33.3	10.00	27.7	7.14	11.33	—
" " marked .	.	15.17	50.00	7.5	8.3	40.00	—	14.28	7.69	—
" " absent .	.	66.21	30.00	70.00	58.3	50.00	72.2	78.56	80.76	100
(b) to cortex, slight .	.	8.27	10.00	7.5	25.00	—	11.1	14.28	—	—
" " marked .	.	11.04	40.00	10.00	16.6	—	—	—	—	—
" " universal .	.	7.58	25.00	2.5	16.6	10.00	11.1	—	—	—
" " absent .	.	73.1	25.00	80.00	41.6	90.00	77.7	71.42	100	100
Arachnoid cysts .	.	5.51	5.00	10.00	8.3	10.00	—	—	3.84	—
Excess of fluid .	.	52.41	75.00	62.5	83.3	80.00	11.1	21.42	42.3	40.00
Semi-gelatinous fluid .	.	3.44	5.00	5.00	8.3	—	—	—	3.84	—
Pus .	.	1.37	—	—	8.3	—	—	—	3.84	—
Tumours .	.	.68	—	—	—	—	—	7.14	—	—
Tuberculosis .	.	—	—	—	—	—	—	—	—	—
9. CEREBRUM—										
Hemispheres, equal .	.	82.76	80.00	97.5	50.00	80.00	61.1	85.7	96.16	60.00
" unequal .	.	17.24	20.00	2.5	50.00	20.00	38.8	14.28	3.84	40.00
Lobes, symmetrical .	.	84.82	85.00	95.00	50.00	90.00	66.6	92.84	92.31	80.00
" asymmetrical .	.	15.18	15.00	5.00	50.00	10.00	33.3	7.14	7.69	20.00
Convulsions—type, simple .	.	16.55	20.00	20.00	—	10.00	27.7	14.28	7.69	40.00
" " normal .	.	82.76	80.00	80.00	91.6	90.00	72.2	85.7	92.31	60.00
" " complex .	.	.68	—	—	8.3	—	—	—	—	—
" " nutrition, normal .	.	44.83	25.00	42.5	25.00	10.00	72.2	71.42	57.69	40.00
" " wasted .	.	55.17	75.00	57.5	75.00	90.00	27.7	28.57	42.3	60.00
10. GRAY SUBSTANCE—										
Thickness, normal .	.	38.88	15.00	35.9	33.3	20.00	66.6	57.14	46.16	40.00
" " atrophied .	.	61.12	85.00	64.1	66.6	80.00	33.3	42.85	53.84	60.00
Vascularity, hyperemic .	.	20.14	20.00	15.38	25.00	20.00	55.5	21.42	3.84	—



Females.		All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
14. LATERAL VENTRICLES—										
Dilatation, moderate	.	41·67	55·00	51·28	58·3	70·00	16·6	21·42	30·76	—
" excessive	.	8·27	20·00	5·12	16·6	10·00	—	7·14	3·84	40·00
Excess of fluid	.	41·67	70·00	46·15	75·00	70·00	11·1	—	26·92	40·00
Granular ependyma	.	8·27	20·00	7·69	8·3	—	—	7·14	7·69	—
Hæmorrhage into ventricles	.	·69	—	—	8·3	—	—	—	—	—
Pus in ventricles	.	·69	—	—	8·3	—	—	—	—	—
Tumours	.	·69	—	—	—	—	—	7·14	—	—
15. MESENCEPHALON—										
Iter, normal	.	59·45	35·00	58·97	16·6	30·00	88·8	100	69·24	60·00
" dilated	.	40·55	65·00	41·03	83·3	70·00	11·1	—	30·76	40·00
16. CORPORA QUADRIGEMINA—										
Congested	.	6·29	—	7·69	8·3	—	16·6	—	3·84	—
Normal	.	72·04	45·00	71·81	50·00	60·00	77·7	92·3	92·31	80·00
Hæmorrhages	.	—	—	—	—	—	—	—	—	—
Foci of softening	.	·69	—	—	8·3	—	—	—	—	—
Sclerosis	.	·69	—	—	—	—	—	—	—	20·00
Tuberculosis	.	—	—	—	—	—	—	—	—	—
Edema	.	20·98	55·00	20·51	41·6	40·00	5·5	7·69	3·84	—
17. CEREBRUM—										
Normal	.	72·73	45·00	79·5	50·00	60·00	72·2	84·6	92·31	80·00
Congestion	.	6·29	—	2·56	16·6	—	22·2	7·69	3·84	—
Hæmorrhage	.	—	—	—	—	—	—	—	—	—
Foci of softening	.	—	—	—	—	—	—	—	—	—
Sclerosis	.	·69	—	—	—	—	—	—	—	20·00
Edema	.	20·28	55·00	17·94	33·3	40·00	5·5	7·69	3·84	—
18. OPTIC THALAMI—										
Normal	.	96·45	100	97·44	75·00	100	100	100	100	80·00
Hæmorrhage	.	—	—	—	—	—	—	—	—	—

Females.		All Forms of Insanity.	General Paralys. sis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
18.	OPTIC THALAMI—									
	Foci of softening	2.79	—	2.56	25.00	—	—	—	—	—
	Sclerosis	.69	—	—	—	—	—	—	—	20.00
19.	OPTIC NERVES—									
	Normal.	98.6	100	100	100	100	100	92.3	100	80.00
	Atrophy	.70	—	—	—	—	—	7.69	—	—
	Sclerosis	.70	—	—	—	—	—	—	—	20.00
20.	PITUITARY BODY—									
	Size, increased	1.39	—	2.56	—	10.00	—	—	—	—
	„ normal	87.41	90.00	84.6	83.3	70.00	94.4	84.6	96.16	80.00
	„ diminished	11.2	10.00	12.84	16.6	20.00	5.5	15.38	3.84	20.00
	Structure, normal	85.32	80.00	82.06	83.3	70.00	82.2	84.6	96.16	80.00
	„ softened	14.68	20.00	17.94	16.6	30.00	16.6	15.38	3.84	20.00
21.	CEREBELLUM—									
	Membranes, vascularity, hyperæmic	29.37	30.00	30.78	16.6	30.00	44.4	46.15	15.38	20.00
	„ „ average	65.74	65.00	64.1	75.00	60.00	50.00	53.84	80.76	80.00
	„ „ anæmic	4.39	5.00	5.12	8.3	10.00	5.5	—	3.84	—
	„ „ adhesion, adherent	11.57	25.00	7.69	8.3	—	11.1	23.08	3.84	—
	„ „ non-adherent	89.43	75.00	92.31	91.6	100	88.8	76.91	96.16	100
	Hemispheres, equal	96.5	95.00	100	83.3	100	94.4	100	96.16	100
	„ „ unequal	3.5	5.00	—	16.6	—	5.5	—	3.84	—
	Lobes, symmetrical	96.5	95.00	100	83.3	100	94.4	100	96.16	100
	„ „ asymmetrical	3.5	5.00	—	16.6	—	5.5	—	3.84	—
	Cortex, normal	75.53	50.00	69.22	66.6	70.00	82.2	100	92.31	80.00
	„ „ atrophied	24.47	50.00	30.78	33.3	30.00	16.6	—	7.69	20.00
	Hæmorrhages	1.39	—	5.12	—	—	—	—	—	—
	Foci of softening	2.09	5.00	2.56	8.3	—	—	—	—	—
	Pus	.69	—	—	8.3	—	—	—	—	—
	Œdema.	20.28	35.00	25.64	33.3	40.00	11.1	7.69	3.84	20.00
	Tumours	.69	—	—	—	—	—	—	3.84	—



Females.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
21. CEREBELLUM— Tuberculosis . . . . .	—	—	—	—	—	—	—	—	—
22. PONTO-BULB— Basilar artery, normal . . . . .	65.04	70.00	61.53	33.3	30.00	82.2	84.6	73.08	60.00
" " " atheromatous . . . . .	34.96	30.00	38.47	66.6	70.00	16.6	15.38	26.92	40.00
" " " aneurysmal dilatation . . . . .	3.49	—	5.12	8.3	10.00	—	—	3.84	—
Membranes, normal . . . . .	77.63	60.00	82.04	75.00	70.00	66.6	69.22	92.31	100
" " congested . . . . .	17.48	25.00	12.27	25.00	20.00	33.3	30.77	7.69	—
" " anæmic . . . . .	4.89	15.00	7.69	—	10.00	—	—	—	—
Atrophy, general . . . . .	—	—	—	—	—	—	—	—	—
" " unilateral . . . . .	2.09	5.00	—	8.3	—	—	—	—	20.00
Congestion . . . . .	16.08	25.00	10.27	25.00	20.00	22.2	23.08	7.69	—
Foci of softening . . . . .	2.09	5.00	—	16.6	—	—	—	—	20.00
Hæmorrhages . . . . .	2.09	5.00	2.56	—	—	—	—	—	—
Tumours . . . . .	—	—	—	—	—	—	—	—	—
Pus . . . . .	.69	—	—	8.3	—	—	—	—	—
Softened floor to fourth ventricle . . . . .	.69	—	—	8.3	—	—	—	—	—
Granular ependyma . . . . .	9.09	35.00	2.56	8.3	—	—	15.38	3.84	—
23. SPINAL CORD— Membranes, hyperæmia . . . . .	—	—	—	—	—	—	—	—	—
normal . . . . .	1 case	—	—	1 case	—	—	—	—	—
anæmic . . . . .	—	—	—	—	—	—	—	—	—
Pus . . . . .	1 case	—	—	1 case	—	—	—	—	—
Tuberculosis . . . . .	—	—	—	—	—	—	—	—	—
Excess of fluid . . . . .	—	—	—	—	—	—	—	—	—
Congestion . . . . .	—	—	—	—	—	—	—	—	—
Substance, softening . . . . .	—	—	—	—	—	—	—	—	—
sclerosis . . . . .	—	—	—	—	—	—	—	—	—
tumour . . . . .	—	—	—	—	—	—	—	—	—
lesion . . . . .	—	—	—	—	—	—	—	—	—

Females.	Normal Weights.	All Forms of Insanity.	General Paralysis.	Dementia.	Organic Dementia.	Senile Dementia.	Epileptic Insanity.	Acute Melancholia and Mania.	Chronic Melancholia and Mania.	Idiocy and Imbecility.
24. CRANIAL NERVES— Abnormalities.	—	—	—	—	—	—	—	—	—	—
25. WEIGHTS (in grammes)—										
Brain, total	1247	1219	1152.5	1213	1302.5	1135	1257	1298	1204	1135
" right hemisphere	—	518	479	523	504	482.5	522	554.5	533.5	407
" left hemisphere	—	513	471	517	489	489.5	519	552	532.5	377
" cerebellum	—	134.5	133.5	137	132.5	130	133	142	139	117
" ponto-bulb	—	25.5	24	26	22	25	26	23	25.5	19.5
" skull-cap	—	366	370	348	362.5	357	362	344	347.5	299
" cerebro-spinal fluid (in ounces)	—	5iii.	5iv.	5iii.	5iv.	5iv.ss.	5iii.	5iii.	5iii.ss.	5iii.
Body, heart (in grammes)	255	264	224.5	249	297.5	282.5	220.5	288	289	205
" right lung	482	525	510	498	524.5	437	521	545	598	738
" left lung	425	418	317	395	410.5	501	383.5	460	462	548
" liver	1286	1198	1161	1078	1199.5	1071	1188	1432	1304	1114
" spleen	—	131.5	131	113	126	118	113.5	151.5	151	116.5
" right kidney	142	109	110	98	122	108.5	103	121	124.5	90
" left kidney	149	119	120	106	134	111	122	131	124.5	91
" pancreas	—	—	—	—	—	—	—	—	—	—
" right adrenal	—	8	10	—	—	—	—	—	8	—
" left adrenal	—	8	10	—	—	—	—	—	8	—
26. BREAKING STRAIN OF RIBS (in pounds)—										
Convex	29	16	22	11	20	11	27.5	10.5	19	15
Concave	30	15	19	10	10	12.5	23	17	15.5	20

THE END.



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